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Health Effects of Prenatal and Postnatal Whole-Body Exposure to Ionizing Radiation in the Beagle Dog

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CSU-FDA
Collaborative Radiological Health Laboratory Annual Report 1982

Health Effects of Prenatal and Postnatal Whole-Body Exposure to Ionizing Radiation in the Beagle Dog

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in collaboration with

Center for Devices and Radiological Health
Rockville, Maryland
and
National Cancer Institute, NIH
Bethesda, Maryland

WHO Collaborating Centers for:
- Standardization of Protection Against Nonionizing Radiations
- Training and General Tasks in Radiation Medicine
- Nuclear Medicine

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Public Health Service
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Center for Devices and Radiological Health
Rockville, Maryland 20857

FOREWORD

In October 1982, the Food and Drug Administration established the Center for Devices and Radiological Health (CDRH) by merging the Bureau of Medical Devices and the Bureau of Radiological Health.

The Center develops and implements national programs to protect the public health in the fields of medical devices and radiological health. These programs are intended to assure the safety, effectiveness and proper labeling of medical devices, to control unnecessary human exposure to potentially hazardous ionizing and nonionizing radiation, and to ensure the safe, efficacious use of such radiation.

The Center publishes the results of its work in scientific journals and in its own technical reports. These reports provide a mechanism for disseminating results of CDRH and contractor projects. They are sold by the Government Printing Office and/or the National Technical Information Service.

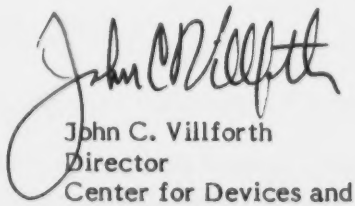
Also, CDRH technical reports in radiological health are made available to the World Health Organization under a memorandum of agreement between WHO and the Department of Health and Human Services. Three WHO Collaborating Centers, established under the Bureau of Radiological Health, continue to function under CDRH:

WHO Collaborating Center for Standardization of Protection Against Nonionizing Radiations;

WHO Collaborating Center for Training and General Tasks in Radiation Medicine; and

WHO Collaborating Center for Nuclear Medicine.

We welcome your comments and requests for further information.



John C. Villforth
Director
Center for Devices and
Radiological Health

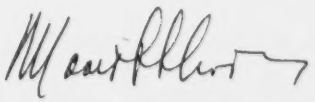
PREFACE

The Division of Risk Assessment of the Center for Devices and Radiological Health, Food and Drug Administration, provides scientific support for the mission of the Center by providing the experimental and statistical information necessary for risk assessment, device evaluation, compliance, and performance standards development. The division also plans, conducts and supports research on the health effects of exposure to radiation, with special emphasis on emissions from electronic products.

Through intramural and extramural epidemiologic studies, laboratory investigations, and critical reviews of the literature, the division evaluates possible health effects resulting from exposure to radiation. Of particular interest are effects of the low radiation dose to which large segments of the population may be exposed.

The Collaborative Radiological Health Laboratory was conceived in 1962 as a joint undertaking between the then Division of Biological Effects of the Bureau of Radiological Health and the Department of Radiology and Radiation Biology at Colorado State University. The laboratory's primary responsibility is to conduct a long-term study of the mortality, morbidity, and physiopathology of beagles exposed to a single dose of ionizing radiation during one of six stages of either prenatal or postnatal development. When the laboratory was first established, the National Cancer Institute, National Institutes of Health, provided support for the construction of laboratory facilities necessary for implementation of the study. This fiscal year, the National Cancer Institute and the Center for Devices and Radiological Health are initiating joint support of the collaborative study.

In the Introduction, Dr. Stephen Benjamin, Director of the Collaborative Radiological Health Laboratory, indicates that the focus of the study is being sharpened to consider life-span shortening and susceptibility of the dog to carcinogenesis as a result of radiation exposure during the prenatal and early postnatal period.



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ABSTRACT

Center for Devices and Radiological Health. CSU-FDA Collaborative Radiological Health Laboratory Annual Report 1982 - Health Effects of Prenatal and Postnatal Whole-Body Exposure to Ionizing Radiation in the Beagle Dog. HHS Publication FDA 84-8042 (69 pp).

The Collaborative Radiological Health Laboratory was established in 1962 by the U.S. Public Health Service and Colorado State University for the purpose of determining in a carefully controlled animal experiment the life-time hazards associated with prenatal and early postnatal exposure to ionizing radiation. The CRHL study is designed to provide information that will facilitate the evaluation of risks to human beings from medical exposure during early development. The study is a long-term (lifespan) study of a moderately large and long-lived mammal exposed at one of several times during development to a relatively small and discrete dose of external radiation. Ages at irradiation selected for comparison reflect the primary concern with medical exposures during the developmental period.

The basic experiment under this contract contains 1680 beagles that will be maintained and evaluated for most of their natural lives. Commitment of animals began in December 1967 and was completed in October 1972. This annual report summarizes the current status of the study for the reporting period of January 1 through December 31, 1982.

INTRODUCTION

The 1982 Collaborative Radiological Health Laboratory Annual Report represents a departure from the format and content of previous reports. During 1982, the overall goals and program content of the major long-term study were modified significantly. Restriction of research funds has necessitated a review of the ongoing efforts at CRHL and a major redirection of those efforts. During the first 20 years of the program, interest was focused on a broad spectrum of potential health effects that might be related to low-level exposure to ionizing radiation. With the long-term study now entering its final stages, the programmatic direction has been narrowed to address only the currently controversial and critical questions relating to susceptibility of the prenatal and early postnatal mammal to radiation carcinogenesis. Thus, the study of cancer induction and related life-span shortening will be the primary effort of future experiments.

DESIGN AND CURRENT STATUS OF THE RESEARCH PROGRAM OF THE COLLABORATIVE RADIOLOGICAL HEALTH LABORATORY

The Collaborative Radiological Health Laboratory (CRHL) was established in 1962 by the U.S. Public Health Service and Colorado State University. CRHL's purpose has been to determine, in a carefully controlled animal experiment, the lifetime hazards associated with prenatal and early postnatal exposure to ionizing radiation. The CRHL study provides information helpful in evaluating risks to human beings from medical exposure during early development. As such, the study occupies a unique position among past and present studies of radiation effects. It is a life-span study of a moderately large and long-lived mammal exposed at one of several times during development to a relatively small, discrete dose of external gamma radiation. Thus, the research is primarily concerned with evaluating the role of age as a factor influencing response to radiation injury.

The research program has been separated into four segments. The major study (Segment III) involves 1,680 beagles and was initiated in December 1967. Supportive studies (Segments I and II), begun in 1964, provided basic information necessary for evaluating delayed effects and are now complete.

Long-Term Study, Segment III. The major experiment in the CRHL program examines the long-term effects in beagles of a single whole-body radiation exposure given at different periods of development. The experimental design for this study is presented in Table 1.

Animals received a single, bilateral, whole-body exposure to ^{60}Co gamma radiation at 8 days postcoitus (dpc), 28 dpc, or 55 dpc, or at 2 days postpartum (dpp), 70 dpp, or 365 dpp. The experimental design called for either 20 R (limited to animals exposed in utero or at 2 dpp) or 100 R midline in-air exposures. The exposure time was 10 minutes. Control animals were sham-irradiated. Both sexes were equally represented. Exposure and dose statistics for Segment III beagles are given in Table 2.

The mean absorbed radiation doses for the two major exposure groups are used for convenience in this report. A whole-body dose was calculated for each dog, and the individual variation is shown in Table 2. Actual dose delivered to each dog in the study is given in Appendices I and II.

Two-thirds of the animals were allocated for maintenance for the duration of their natural lives and the remaining one-third were originally scheduled to be killed for study at 5, 8, 11, or 14 years of age. Table 3 summarizes the current status of dogs assigned to Segment III. By December 31, 1982, 329 dogs in the groups scheduled for sacrifice and eligible for inclusion as sacrifice dogs were dead. An additional 729 dogs had died or had been euthanatized because of terminal illness. Six-hundred-twenty-two (37 percent) of the Segment III dogs remained alive. The overall mean age for these dogs was 12.1 years. Dogs were not entered into the study at one time and differences in age distribution among the various treatment groups exist (see Table 4). The controls and 365 dpp groups contain the oldest members of the population and have the greatest mean age while the groups exposed at 8 dpc or 28 dpc have the lowest mean age.

A population of 72 environmental control dogs ranging in age from 1 to 24 months had been maintained to monitor time trends in the colony's clinical and pathologic characteristics. This population was terminated in 1982.

Table 1. Experimental design of Long-Term Study, Segment III.

		Exposure					
		0 R		20 R		100 R	
Exposure	Sex	L†	S††	L	S	L	S
Prenatal:							
8 dpc*	M	20	10	40	20	40	20
	F	20	10	40	20	40	20
28 dpc	M	20	10	40	20	40	20
	F	20	10	40	20	40	20
55 dpc	M	20	10	40	20	40	20
	F	20	10	40	20	40	20
Postnatal:							
2 dpp**	M	20	10	40	20	40	20
	F	20	10	40	20	40	20
70 dpp	M	20	10	--	--	40	20
	F	20	10	--	--	40	20
365 dpp	M	20	10	--	--	80	40
	F	20	10	--	--	80	40

† Refers to animals scheduled to live out their lifespan.

†† Refers to animals scheduled to be killed according to a sacrifice schedule at 5, 8, 11 or 14 years of age.

* Days postcoitus.

** Days postpartum.

Table 2. Exposure and dose statistics for Long-Term Study, Segment III.

Age at Exposure	Number Exposed	Exposure-R Mean (Range)	Absorbed Dose - rads Mean (Range)	Mean Absorbed Dose for Major Exposure Groups (rads)
Controls (all ages)	359†	0	0	
8 dpc*	120	20.0 (17.1- 22.0)	15.9 (15.4-16.4)	
28 dpc	120	20.0 (17.4- 21.4)	16.0 (15.4-16.9)	
55 dpc	120	20.0 (18.7- 21.0)	15.6 (15.1-16.2)	16.3
2 dpp**	120	20.0 (19.4- 21.5)	17.5 (17.3-17.8)	
8 dpc	120	101.3 (93.2-119.3	81.6 (74.6-02.6)	
28 dpc	120	101.3 (94.9-113.2)	80.8 (77.4-93.8)	
55 dpc	120	101.1 (91.0-107.9)	80.8 (75.3-90.0)	
2 dpp	120	101.5 (95.0-109.1)	88.3 (86.5-90.0)	82.6
70 dpp	118+	99.5 (92.5-111.5)	82.6 (81.3-83.9)	
365 dpp	231+	100.0 (90.2-117.2)	81.2 (76.9-90.2)	

† Represents exclusion of 12 dogs which died prior to irradiation or sham-irradiation (see Table 3).

* Days postcoitus.

** Days postpartum.

Table 3. Current status of Long-Term Study, Segment III as of December 31, 1982.

Age at Exposure	Dose Group (rads)	No. Died or Euthanatized	No. Dead in Scheduled Sacrifice Group	No. Dead/ Total No. in Group	[%]
Controls (all ages)	0	155 (1)†	84	239/360	[66]
8 dpc*	16	36	20	56/120	[47]
	83	42	19	61/120	[51]
28 dpc	16	59	21	80/120	[67]
	83	38	22	60/120	[50]
55 dpc	16	53	22	75/120	[63]
	83	58	24	82/120	[68]
2 dpp**	16	57	23	80/120	[67]
	83	50	22	72/120	[60]
70 dpp	83	54 (2)	24	78/120	[65]
365 dpp	83	127 (9)	48	175/240	[73]
TOTALS		729	329	1058/1680	[63]

† The number in parentheses () represents dogs that died prior to irradiation or sham-irradiation. They are included in the total, e.g., 154 control dogs died after sham-irradiation and one before that time.

* Days postcoitus.

** Days postpartum.

Table 4. Current age of surviving Segment III beagles as of December 31, 1982.

Age at Exposure	Dose Group (rads)	Mean Age (yrs)	Min.Age (yrs)	Max.Age (yrs)
All ages	0	12.6	9.9	15.0
8 dpc*	16	11.5	10.6	13.6
	83	11.4	10.4	13.4
28 dpc	16	11.8	10.5	13.9
	83	11.7	10.7	13.6
55 dpc	16	12.2	11.3	14.1
	83	12.1	11.3	14.2
2 dpp**	16	12.2	10.2	13.8
	83	11.9	11.2	14.1
70 dpp	83	12.2	11.3	14.2
365 dpp	83	12.5	11.3	15.0

* Days postcoitus.
** Days postpartum.

EFFECTS OF IRRADIATION DURING DEVELOPMENT IN THE BEAGLE

CUMULATIVE SURVIVAL STATISTICS THROUGH TEN YEARS OF AGE FOR SEGMENT III BEAGLES OF THE CRHL LONG-TERM STUDY

One of the variety of end points being evaluated in Segment III is life-span. Mortality data, in the form of cumulative survival rates, can be used to determine if any life shortening effects occur in association with any specific treatment groups. Assignments of beagles to Segment III were made at 14 days of age, and all subjects were alive.

Probability statements were determined on a daily basis; tabulated data are derived from these analyses at yearly intervals. Thus, the number alive is the number at risk on the last day of each year. The number of subjects that have reached these ages without being removed from the study for causes other than spontaneous death are listed in the experimental design column.

Tables 1 and 2 present cumulative probabilities through 10 years of age for survival for each sex and for both sexes combined. As of December 31, 1982, virtually all dogs have reached at least 10 years of age. No decrease in survival is evident in any dose groups through 10 years of age. No significant direct sex effect is apparent since the estimated probabilities for survival of females is greater than that for males in six groups, and the converse is true for the other five groups. In addition, no evidence supports a life shortening dose-related effect for either sex. The estimate probabilities for survival are greater than the control estimate for nine out of ten treatment groups for males, and for five of the ten treatment groups for females. Both analyses for sex effect and dose effect involve the use of the binomial sign test.

Table 1. Estimated cumulative probabiliites of survival for combined male and female CRHL Segment III beagles exposed to ^{60}Co gamma rays at risk for 10 years.

Treatment	Both Sexes				
	Exper. Design	Number Alive	Cumulative Survival	.95 Conf. Limits Group Lower	Upper
8 dpc (16 rad)	104	79	.770	.679	.846
8 dpc (83 rad)	104	79	.771	.680	.846
28 dpc (16 rad)	105	68	.661	.563	.749
28 dpc (83 rad)	104	87	.848	.767	.909
55 dpc (16 rad)	103	73	.725	.630	.807
55 dpc (83 rad)	100	73	.751	.658	.830
2 dpp (16 rad)	103	68	.677	.580	.763
2 dpp (83 rad)	102	67	.668	.568	.756
70 dpp (83 rad)	101	73	.742	.648	.822
365 dpp (83 rad)	198	128	.669	.600	.733
Controls	296	209	.729	.677	.777

Table 2. Estimated cumulative probabilities of survival for CRHL Segment III beagles exposed to ^{60}Co gamma rays at risk for 10 years.

Treatment Group	Males					Females				
	Exper. Design	Number Alive	Cumulative Survival	.95 Conf. Limits Lower	Upper	Exper. Design	Number Alive	Cumulative Survival	.95 Conf. Limits Lower	Upper
8 dpc (16 rad)	52	39	.765	.630	.869	52	40	.776	.641	.879
8 dpc (83 rad)	51	39	.777	.641	.879	52	40	.782	.649	.882
28 dpc (16 rad)	52	36	.705	.565	.822	52	32	.634	.491	.761
28 dpc (83 rad)	52	45	.878	.764	.950	52	42	.818	.690	.909
55 dpc (16 rad)	51	39	.775	.638	.878	52	34	.676	.535	.796
55 dpc (83 rad)	51	37	.748	.612	.855	49	36	.754	.614	.863
2 dpp (16 rad)	53	38	.725	.586	.838	50	30	.631	.487	.760
2 dpp (83 rad)	53	38	.727	.590	.839	49	36	.748	.606	.859
70 dpp (83 rad)	50	37	.761	.625	.867	51	36	.724	.584	.837
365 dpp (83 rad)	98	69	.724	.627	.808	100	59	.613	.512	.708
Controls	151	105	.721	.645	.788	145	104	.737	.661	.804

SUMMARY OF FINDINGS IN SEGMENT III BEAGLES DURING 1982

Segment III Sacrifice Dogs

During 1982, 23 dogs were killed in accordance with the 11-year sacrifice schedule. This leaves only 10 more dogs to be sacrificed to complete the 11-year group. Since no 14-year group is planned, this will essentially complete all sacrifices. Table 1 shows the experimental design for the 11-year group and the number of dogs remaining in the sacrifice pool. All dogs which are in the sacrifice pool and are not scheduled for sacrifice will ultimately be allowed to complete their life span, essentially becoming part of the survival and carcinogenesis study.

Principal Disease and/or Cause of Death in Non-Sacrifice Segment III Beagles

During 1982, 147 dogs died or were euthanized because of terminal diseases. Neoplasia was by far the leading major disease or cause of death in this population (see Table 2). Forty-two percent (62/147) of the dogs had a neoplasm, benign or malignant, which played a role in euthanasia or death. It must be recognized that most cases which died during 1982 have not been confirmed by complete histopathological workup and are based on gross diagnoses. Therefore, detailed statistical analysis of these data are not warranted. As in the past, the second leading disease problem continues to be hypothyroidism. As would be expected in this aging population of dogs, chronic renal disease leading to renal failure and heart diseases are becoming more important. Besides hypothyroidism, endocrine disorders remain a major factor, specifically diabetes mellitus and hyperadrenocorticism.

The trends seen during 1982 are expected to continue. We anticipate that between 40 and 50 percent of the remaining dogs will die with a neoplasm as a major contributing factor and that cardiac and renal disease will gradually assume a greater importance as causes of death as the dogs age.

Appendix II gives the status of each dog in the study, including the major diagnosis for each nonsacrifice dog that died or was euthanatized.

Malignancy As A Cause of Death in Segment III Beagle

With most cases not confirmed by histopathological review, it is somewhat hazardous to make this type of determination. From the gross findings, we have a reasonable estimate of approximately how many dogs had cancer as a major disease. These figures should not be taken as statistically valid, however, since gross findings are probably no better than 50 to 75 percent accurate. One change from the results up to 1982 is present in Table 3, which summarizes these data. One case thought to be a malignant lymphoma in a dog given 83 rads at 365 days postpartum was finally determined not to be lymphoid neoplasia. This is reflected in the total number of deaths due to malignancy up to 1982.

Table 1. Modified experimental design for beagles to be sacrificed at 11 years of age in Segment III of the Long-Term Study, as of December 31, 1982.

Age at Exposure	Dose Group (rads)	No. Dogs Sacrificed/ No. Dogs Scheduled to be Sacrificed	Dogs Remaining to be Sacrificed			Dogs Remaining in Sacrifice Pool		
			Males	Females	Total	Males	Females	Total
8 dpc*	0	4/4	0	0	0	2	1	3
	16	4/6	2	0	2	8	5	13
	83	3/6	2	1	3	4	5	9
28 dpc	0	4/4	0	0	0	2	2	4
	16	5/6	0	1	1	1	1	2
	83	6/6	0	0	0	7	7	14
55 dpc	0	4/4	0	0	0	1	2	3
	16	4/6+	0	2+	2	4	0+	4
	83	6/6	0	0	0	1	1	2
2 dpp**	0	4/4	0	0	0	1	0	1
	16	6/6	0	0	0	2	0	2
	83	5/6	1	0	1	4	6	10
70 dpp	0	4/4	0	0	0	1	2	3
	83	6/6	0	0	0	4	3	7
365 dpp	0	4/4	0	0	0	1	1	2
	83	9/10	0	1	1	2	3	5
Total		78/88+	5	5+	10	45	39	84

* Days postcoitus

** Days postpartum

\+ Although the experimental design calls for 3 females to be sacrificed in the 55 dpc, 16 rad group, no females remain alive. Therefore, the number of dogs in this group will be 3 males and 1 female, and the total number of 11-year sacrifice dogs will be 86.

Table 2. Principal disease and/or cause of death and irradiation history in nonsacrifice Segment III beagles that died between January 1, 1982 and December 31, 1982.*

Age at Irradiation Dose Group (rads)	All Ages	8 dpc		28 dpc		55 dpc		2 dpp		70 dpp	365 dpp	Total Diagnoses
	0	16	83	16	83	16	83	16	83	83	83	
Neoplasia	5	7	5	8	3	4	5	3	7	6	9	62
Hypothyroidism	4	1	0	1	1	1	3	2	1	2	3	19
Chronic renal failure	2	1	1	1	1	1	1	1	1	1	1	12
Heart disease	0	0	2	1	2	0	2	1	2	0	1	11
Convulsive seizures	1	0	1	1	0	1	1	0	0	0	0	5
Diabetes mellitus	0	1	0	0	0	0	1	0	1	2	0	5
Pulmonary or aortic thrombosis	1	0	0	0	1	0	1	0	1	0	2	6
Inflammatory disease	1	1	0	1	1	1	1	1	0	1	1	9
IV Disc disease	1	0	1	0	0	0	2	0	0	0	1	5
Malabsorption	2	0	0	0	0	0	0	1	0	0		3
CNS Disorder	0	0	2	0	1	0	0	0	0	0	1	4
Hyperadrenocorticism	1	0	1	0	0	0	1	0	1	0	1	5
Other	5	1	0	0	3	3	1	4	2	1	5	25
Total Number Diagnoses**	23	12	13	13	13	11	19	13	16	13	25	171
Total Number Dogs**	22	10	11	12	12	11	15	11	13	11	19	147

* Diagnoses for 1982 are based primarily on gross necropsy findings.
** Some dogs have more than one diagnosis.

Table 3. Summary of deaths due to malignancy in Segment III beagles as of December 31, 1982.

Age at Exposure	Dose Group (rads)	No. in Group	No. Died or Euthanatized	No. Dead Due to Malignancy Through 1981	1982(gross)†
Controls	0	360	155	24	5
8 dpc*	16	120	36	7	7
	83	120	42	2	5
28 dpc	16	120	59	9	7
	83	120	38	4	3
55 dpc	16	120	53	12	4
	83	120	58	15	4
2 dpp*	16	120	57	8	3
	83	120	50	11	6
70 dpp	83	120	54	13	6
365 dpp	83	240	127	26	8
Totals			729	131	58

* Days postcoitus.
** Days postpartum.
† Diagnoses for 1982 are based on gross findings primarily and are not all confirmed (see text).

1982 PUBLICATIONS

Benjamin, S.A., L. Bishop, R.D. Brewster, R.W. Norrdin. W.J. Saunders and L.C. Stephens. Thyroid neoplasia and hypothyroidism in dogs irradiated during development. Radiat Res 91:332-333 (abst) (1982).

Brewster, R.D., S.A. Benjamin and R.W. Thomassen. Spontaneous corpulmonale in laboratory beagles. Lab Anim Sci (accepted for publication).

Fabry, A., S.A. Benjamin and G.M. Angleton. Nodular hyperplasia of the liver in the beagle dog. Vet Pathol 19:109-119 (1982).

Keng, P.C., A.C. Lee, A.B. Cox, D.S. Bergtold and J.T. Lett. Effects of heavy ions on rabbit tissues: cataractogenesis. Internatl J Radiat Biol 41(2):127-137 (1982).

Kunkle, B.N., R.W. Norrdin, R.K. Brooks and R.W. Thomassen. Osteopenia with decreased bone formation in beagles with malabsorption syndrome. Calcif Tissue Int 34:396-402 (1982).

Miller, G. and S.A. Benjamin. Quantitative alterations of thymic development in irradiated canine fetuses. Radiat Res 91:294 (abst) (1982).

Miller, G.K. and S.A. Benjamin. Radiation-induced alterations in prenatal lymphoreticular development in the beagle dog. I. Quantitative alterations in thymic development. (Submitted to Lab Invest)

Miller, G.K. and S.A. Benjamin. Radiation-induced alterations in prenatal lymphoreticular development in the beagle dog. II. Morphologic alterations in developing lymphoid organs. (Sumitted to Lab Invest)

Montgomery, D.L. and A.C. Lee. Brain damage in the epileptic Beagle dog. Vet Pathol (submitted) 1982.

Norrdin, R.W. and M.S. Shih. Profiles of cortical remodeling sites in longitudinal rib sections of beagles with renal failure and parathyroid hyperplasia. (submitted).

Stephens, L.C., R.W. Norrdin and S.A. Benjamin. Experimental parafollicular cell (c-cell) hyperplasia in beagle puppies. (In preparation)

Stephens, L.C., W.J. Saunders and R.S. Jaenke. Ectopic thyroid carcinoma with metastases in a beagle dog. Vet Pathol 19:669-675 1982.

CUMULATIVE PUBLICATIONS

Angleton, G.M. Some inferences on the in vivo specificity of enzymes based on in vitro studies using acetylocholinesterase. Radiat Res 22:167 (abs) (1964).

Angleton, G.M. A mathematical model for the biological effectiveness of radiations. Health Phys 13:45-50 (1967).

Angleton, G.M. Mission risk factors: the bioradiological component. Adv Astronaut Sci 24 (1967).

Angleton, G.M. Radiation recovery studies. Air Force Weapons Laboratory, Kirtland Air Force Base, NM. Tech Report No AFWL-TR-66-161 (1967).

Angleton, G.M. Radiation recovery studies. Air Force Weapons Laboratory, Kirtland Air Force Base, NM. Tech Report No AFWL-TR-69-13 (1969).

Angleton, G.M. A method for leak testing radium sources. Health Phys 18:160 (1970).

Angleton, G.M. Book review: Foundations of mathematical biology, Vols I, II and III. R. Rosen, Ed. Academic Press, Inc., New York, NY. Astronaut Sci 2:121-122 (1974).

Angleton, G.M. Effective dose assignments for beagles bilaterally exposed to cobalt: ^{60}Co gamma rays. Radiat Res 62:587 (abs) (1975).

Angleton, G.M. Dose assignment criteria for beagles exposed bilaterally to ^{60}Co gamma rays. Health Phys 35:625-628 (1978).

Angleton, G.M., C.D. Bonham and L.L. Shannon. Direct processing of field data. J Range Manage 19:143-144 (1966).

Angleton, G.M., P.B. Carter, L.F. Wailly and J.W. Watters. Dosimetry based on continuous spatial scanning in radiation therapy. Health Phys 27:650 (abs) (1974).

Angleton, G.M. and A.C. Lee. Dependence on adult interzygomatic distance, skull length and skull index on level of radiation exposure during development. Radiat Res 59:113 (abs) (1974).

Angleton, G.M. and C.A. LoPresti. A summary of the dosimetrics for exposures to ^{60}Co of the beagles entered into the CRHL Long-Term Study. Health Phys 33:100-103 (1977).

Angleton, G.M., K.L. Olson and W. deAlva. Natural text data files for clinical and pathology records. Soc Computer Med (abs) (1980).

Angleton, G.M., B.H. Peterson, A.C. Lee and R.J. Garner. LD-50 and dose rate studies in beagles. Radiat Res 39:473 (abs) (1969).

Angleton, G.M. and D. Pettus. Relative growth law with a threshold. Perspect Biol Med 9:421-424 (1966).

Angleton, G.M., J.K. Prince, P.B. Carter, L.F. Wailly and J.F. Watters. Depth dose dosimetry using a diode probe detector. Proc San Diego Biomed Symp 13:427-432 (1974).

Angleton, G.M., C.D. Robinette, P.B. Carter and L.F. Wailly. Quantification of post-irradiation leukocyte data relative to estimating effective exposure. Proc 3rd Int Congr IRPA, pp 184-189 (1974).

Bainter, H.T. and G.M. Angleton. Quantitative dose-response relationships for erythrocyte levels in irradiated beagles. Radiat Res 67(3):592 (abs) (1976).

Baker, D.W., C.W. Miller and H.F. Stegall. Blood flow dynamics at the aortic bifurcation. Congr Eng Med Biol, Las Vegas, Nev, p 30 (abs) (1971).

Benjamin, M.M. Differential diagnostic clues from the hematocrit. Bull Clin Vet Med 1:1-2 (1966).

Benjamin, M.M. Interpretation of urinalysis. Proc 34th Ann Mtg Am Anim Hosp Assoc, NY, pp 72-74 (1967).

Benjamin, M.M. The hemogram of canine malignant lymphoma. Am J Vet Clin Pathol 1:51-59 (1967).

Benjamin, S.A. Developmental lesions and neoplasia in dogs irradiated during prenatal or early postnatal life. Teach Environ Pathol (abs) (1980).

Benjamin, S.A., G.M. Angleton, A.M. Hargis, R.S. Jaenke, A.C. Lee, C.W. Miller, R.W. Norrdin and R.D. Phemister. Age as a factor influencing the response to irradiation during development in the beagle dog. 21st Ann Conf Radiat Control, Oklahoma City, Okla (1979).

Benjamin, S.A., G.M. Angleton, A.M. Hargis, R.S. Jaenke, A.C. Lee, C.W. Miller, R.W. Norrdin and R.D. Phemister. Age as a factor influencing the response to irradiation during development in the beagle dog. Radiation: minimizing exposure; optimizing use. 11th Natl Conf Radiat Control (1981).

Benjamin, S.A., G.M. Angleton, A.M. Hargis, R.S. Jaenke, A.C. Lee, C.W. Miller, R.W. Norrdin and R.D. Phemister. Potential health effects of low level irradiation during development in the dog. J Am Vet Med Assoc 174:953 (abs) (1979).

Benjamin, S.A., J. Boulay, B. Byrne and D.N. Kitchen. Mammalian models for research on aging. Invited contributor: Sections on carnivores as models for research on aging, alimentary system (pp 207-211) and periodontitis (pp 343-351), Natl Acad Press, Washington, DC (1981).

Benjamin, S.A., A.C. Lee, D.J. Schweitzer and R.D. Phemister. Retinal dysplasia and atrophy in dogs irradiated during ocular development. Radiat Res 83:382 (abs) (1980).

Benjamin, S.A., R.W. Thomassen, G.M. Angleton, A.C. Lee, R.S. Jaenke and R.D. Phemister. Effect of whole-body irradiation during prenatal and early postnatal development in the beagle dog. Radiat Res 74:514 (abs) (1978).

Benjamin, S.A., G.M. Angleton, A.M. Hargis, R.S. Jaenke, A.C. Lee, C.W. Miller, R.W. Norrdin and R.D. Phemister. Health effects in dogs which received whole body gamma irradiation during pre- or postnatal development. Symp Biological Effects and Dosimetry of Ionizing Radiation, Bureau of Radiological Health, HHS Pub (FDA) 80-8126, pp 257-266 (1980).

Benjamin, S.A. Radiation-induced nasal cavity tumors in animals. In: Comparative Pathology of Nasal Cavity Tumors in Man and Animals, CRC Press (In Press) (1981).

Benjamin, S.A., L. Bishop, R.D. Brewster, R.D. Norrdin, W.J. Saunders and L.C. Stephens. Thyroid neoplasia and hypothyroidism in dogs irradiated during development. Radiat Res 91:332-333 (abst) (1982).

Berman, E., J. Davis and J.F. Stara. A dental chart of the domestic cat (Felis catus L.). Lab Anim Care 17:511-513 (1967).

Bier, C. and R.S. Jaenke. Myocardial mitochondrial function in the adriamycin cardiomyopathy of rabbits. J Natl Cancer Inst 47:1091-1094 (1976).

Brewster, R.D., S.A. Benjamin and R.W. Thomassen. Spontaneous corpulmonale in laboratory beagles. Lab Anim Sci (accepted for publication) (1982).

Brooks, A.L., S.A. Benjamin, R.K. Jones and R.O. McClellan. Interaction of 144 cerium and partial hepatectomy in the production of liver neoplasms in Chinese hamsters. Radiat Res (In Press) (1981).

Burton, J.D., R.J. Garner and R.S. Russell. Possible relationships between the deposition of fission products and levels of dietary contamination. In: Radioactivity and Human Diet. R.S. Russell, Ed. Pergamon Press, Oxford, England (1966).

Butterfield, A.B., C.W. Miller, W.B. Lumb, F.D. McLeod, A.W. Nelson and M.B. Histand. Inverse effect of chronically elevated blood flow on atherogenesis in miniature swine. Atheroscler 26:215-224 (1977).

Dagle, G.E., J.L. Lebel, R.D. Phemister, R.L. Watters and L.S. Gomez. Translocation kinetics of plutonium oxide from the popliteal lymph nodes of beagles. Health Phys 28:395-398 (1975).

Dagle, G.E., R.D. Phemister, J.L. Lebel, R.S. Jaenke and R.L. Watters. Plutonium-induced popliteal lymphodenitis. Radiat Res 61:239-250 (1975).

Daigle, R.E., C.W. Miller and M.B. Histand. An ultrasonic esophageal probe for measurements of aortic flow and wall motion. Proc 10th Ann Rocky Mount Bioengin Symp at Colorado University, Boulder, Colo, pp 69-72 (1973).

Daigle, R.E., C.W. Miller, M.B. Histand, F.D. McLeod and D.E. Hokanson. Nontraumatic aortic blood flow sensing using an ultrasonic esophageal probe. J Appl Physiol 38:1153-1160 (1975).

Dennis, M.O., R.C. Nealeigh, R.L. Pyle, S.H. Gilbert, A.C. Lee and C.W. Miller. Echocardiographic assessment of normal and abnormal valvular function in beagle dogs. Am J Vet Res 39:1589-1591 (1978).

Eisenbrandt, D.L. and R.D. Phemister. Counting renal corpuscles in tissue sections. Virchows Arch B Cell Path 32:177-184 (1980).

Eisenbrandt, D.L. and R.D. Phemister. Radiation injury in the neonatal canine kidney. I. Pathogenesis. Lab Invest 37(5):437 (1977).

Eisenbrandt, D.L. and R.D. Phemister. Radiation injury in the neonatal canine kidney. II. Quantitative morphology. Lab Invest 38:225-231 (1978).

Eisenbrandt, D.L. and R.D. Phemister. Postnatal development of the canine kidney: Quantitative and qualitative morphology. Am J Anat 154(2):179-193 (1979).

Fabry, A., S.A. Benjamin and G.M. Angleton. Nodular hyperplasia of the liver in the beagle dog. J Vet Pathol 19:109-119 (1982).

Frederiksson, L., R.J. Garner and R.S. Russell. Caesium 137. In: Radioactivity and Human Diet, R.S. Russell, Ed. Pergamon Press, Oxford, England (1966).

Garner, R.J. Radiation and farm animals. In: International Encyclopedia of Veterinary Medicine, T. Dalling and A. Robertson, Eds. Methuen, Toronto, Canada (1966).

Garner, R.J. Radiation and radiation hazards. In: Vet Annual, W.A. Pool, Ed. Seventh Issue, 1965/66. Wright, Bristol, England (1966).

Garner, R.J. A mathematical analysis of the transfer of fission products to cows' milk. Health Phys 13:205-212 (1967).

Garner, R.J. Part Seven: Radioactive materials, pp 407-442. In: Garner's Vet Toxicol, E.G.C. Clarke and M.L. Clarke, Eds. 3d ed. Bailliere, Tindall and Cassell, London, England (1967).

Garner, R.J. Radiation and radiation hazards, pp 252-262. In: Vet Ann. W.A. Pool, Ed. Eighth Issue, 1966/67. Wright, Bristol, England (1967).

Garner, R.J. Radiation and radiation hazards. In: Vet Ann. W.A. Pool, Ed. Ninth Issue, 1967/68. Wright, Bristol, England (1968).

Garner, R.J. I. The beagle colony at the Collaborative Radiological Health Laboratory. Contribution to special feature. Lab Manage pp 18-25 (1968).

Garner, R.J. Radiation and radiation hazards, p 240. In: Vet Annu. C.S.G. Grunsell, Ed. Tenth Issue, 1969. Wright, Bristol, England (1969).

Garner, R.J. Transfer of radioactive materials from the terrestrial environment to animals and man. CRC Crit Rev Environ Control 2:337-385 (1971).

Garner, R.J. and D.A. Barber. Effects of radioactive substances on animals and plants. In: Radioactivity and Human Diet, R.S. Russell, Ed. Pergamon Press, Oxford, England (1966).

Garner, R.J., J.P. Graves and C.E. Lane. Irradiation and enzyme ontogenesis in the rat and beagle, pp 975-984. In: Radiation Biology of the Fetal and Juvenile Mammal, M.R. Sikov and D.D. Muhlum, Eds. USAEC, Div Tech Inform (1969).

Garner, R.J. and F. Morley. Agricultural implications of a release of fission products from criticality incident. Health Phys 13:465-475 (1976).

Garner, R.J., R.D. Phemister, G.M. Angleton, A.C. Lee and R.W. Thomassen. Age variations in radiosensitivity of the developing beagle. 2. Postnatal radiosensitivity, p 78. In: Abstracts of the 4th Int Congr Radiat Res, France (abs) (1970).

Garner, R.J., R.D. Phemister, G.M. Angleton, A.C. Lee and R.W. Thomassen. Effects of age and sex on the acute lethal response of the beagle to cobalt-60 gamma radiation. Radiat Res 58:190-195 (1974).

Garner, R.J. and R.S. Russell. Isotopes of iodine. In: Radioactivity and Human Diet, R.S. Russell, Ed. Pergamon Press, Oxford, England (1966).

Haack, D.W., J.H. Abel and R.S. Jaenke. Effects of hypoxia on the distribution of calcium in arterial smooth muscle cells of rats and swine. Cell Tissue Res 157:125 (1975).

Hargis, A.M., A.C. Lee and R.W. Thomassen. Tumor and tumor-like lesions of perilimbal conjunctiva in laboratory dogs. J Am Vet Med Assoc 173:185-190 (1978).

Hargis, A.M., L.C. Stephens, S.A. Benjamin, R.D. Brewster and R.K. Brooks. The relationship of hypothyroidism to diabetes mellitus, renal amyloidosis and thrombosis in purebred beagles. Am J Vet Res 42(6):1077-1081 (1981).

Hargis, A.M. and R.W. Thomassen. Adenoma of the epithelium lining the eustachian tube in a beagle dog. Vet Path 17:238-240 (1980).

Hargis, A.M. and R.W. Thomassen. Animal model of human disease: solar keratosis (solar dermatosis, senile keratosis) and solar keratosis with squamous cell carcinoma. Am J Pathol 94:193-196 (1979).

Hargis, A.M. and R.W. Thomassen. Adenoma arising from epithelium lining the eustachian tube in the beagle. Vet Pathol 17(2):239-241 (1979).

Hargis, A.M. and R.W. Thomassen. Hepatic abscesses in beagle puppies. Lab Anim Sci 30(4):689-693 (1980).

Hargis, A.M., R.W. Thomassen and R.D. Phemister. Chronic dermatosis and cutaneous squamous cell carcinoma in the beagle dog. Vet Pathol 14:218-228 (1977).

Harrigan, J.E. and J.A. Modrick. S-R and R-5 acquisition as a function of meaningfulness. Psychononic Sci 9:199-200 (1967).

Histand, M.B., R.E. Daigle, C.W. Miller and F.D. McLeod. Evaluation of the pulsed Doppler with a fast Fourier transform. 11th Ann Rocky Mount Bioeng Symp, BM74 312:5560 (1974).

Histand, M.B. and C.W. Miller. A comparison of velocity profiles measured in unexposed and exposed arteries. Biomed Sci Instrum 9:121-124 (1972).

Histand, M.B. and C.W. Miller. Transcutaneous measurement of blood velocity profiles and instantaneous flow. 25th Ann Conf Eng Med Biol, p 38 (abs) (1972).

Histand, M.B. and C.W. Miller. Noninvasive ultrasonic detection of atherosclerosis. pp 24-28. In: Fluid Dynamic Aspects of Arterial Disease, R.M. Nerem, Ed. Ohio State Univ, Eng Exp Stn, Columbus, Ohio (1974).

Histand, M.B., C.W. Miller and F.D. McLeod,Jr. The transcutaneous measurement of blood velocity profiles and flow. Cardiovasc Res 7:703-712 (1973).

Hokanson, D.E., D.J. Mozersky, D.S. Sumner, F.D. McLeod and D.E. Strandness. Ultrasonic arteriography--a noninvasive method of arterial visualization. Radiol 102:435 (1972).

Hokanson, D.E., D.E. Strandness and C.W. Miller. An echo tracking system for recording arterial wall motion. IEEE Trans Sonics Ultrason 17:130-132 (1970).

Holst, P.A. and R.D. Phemister. The prenatal development of the dog: Preimplantation events. Biol Reprod 5:194-206 (1971).

Holst, P.A. and R.D. Phemister. Onset of diestrus in the beagle bitch: Definition and significance. Am J Vet Res 35:401-406 (1974).

Holst, P.A. and R.D. Phemister. Temporal sequence of events in the estrous cycle of the bitch. Am J Vet Res 36:705-706 (1975).

Jaenke, R.S. An anthracycline antibiotic-induced cardiomyopathy in rabbits. Lab Invest 30:292-304 (1974).

Jaenke, R.S. Delayed and progressive myocardial lesions after adriamycin administration in the rabbit. Cancer Res 36:2958-2966 (1976).

Jaenke, R.S. and A.F. Alexander. Fine structural alterations of bovine peripheral pulmonary arteries in hypoxia-induced hypertension. Am J Pathol 73:377-398 (1973).

Jaenke, R.S. and L.F. Fijardo. Adriamycin-induced myocardial lesions. Am J Surg Pathol Vol. I (1978).

Jaenke, R.S., R.D. Phemister, G.M. Angleton and D.W. Davis. Characterization of renal damage following perinatal gamma irradiation in the beagle. Radiat

Res 72:277-290 (1977).

Jaenke, R.S., R.D. Phemister and R.W. Norrdin. Progressive glomerulosclerosis and renal failure following perinatal gamma radiation in the beagle. Lab Invest 42(6):643-655 (1980).

Keng, P.C., A.C. Lee, A.B. Cox, D.S. Bergtold and J.T. Lett. Effects of heavy ions on rabbit tissues: cataractogenesis. Internatl J Radiat Biol 41(2):127-137 (1982).

Kunkle, B.N., R.W. Norrdin, R.K. Brooks and R.W. Thomassen. Osteopenia with decreased bone formation in beagles with malabsorption syndrome. Calc Tissue Intnatl 34:396-402 (1982).

Lambert, P.D., A.C. Lee, J.A. Modrick, R.D. Phemister and W.J. Tietz. Evaluation of radiation induced eye defects in beagles by means of visual evoked responses. Proc Clin Soc Comm Off Assoc, p 28 (abs) (1968).

Lambert, P.D., R.J. Morgan, G.M. Angleton and W.J. Tietz. Determination of propagation direction in peripheral nerve. Proc 6th Ann Rocky Mount Bioeng Symp, pp 88-91 (1969).

Lambert, P.D., R.C. Nealeigh and M. Wilson. Effects of microwave exposures on the central nervous system of beagles. J Microwave Power 7:367-380 (1972).

Lambert, P.D., R.D. Phemister and W.J. Tietz. Visual evoked reponses of in utero irradiated beagles. Radiat Res 31:655 (abs) (1967).

Lambert, P.D., R.D. Phemister and W.J. Tietz. Visually evoked EEG potentials of beagles irradiated in utero. Electroenceph Clin Neurophysiol 25:278-281 (1968).

Lambert, P.D. and W.J. Tietz. Development of the average visual evoked potential in the beagle. Proc 53d Ann Mtg Fed Am Soc Exp Biol, p 28 (abs) (1969).

LeCrone, C.N. Absence of special fetal hemoglobin in beagle dogs. Blood 35:451 (1970).

Lee, A.C. The effects of acute ovarian irradiation in the beagle. Proc 3rd Int Congr Radiat Res, Italy, June 1966, p 138 (abs) (1967).

Lee, A.C. and G.M. Angleton. Modification of skull length and interzygomatic distance for the beagle following in utero irradiations. Radiat Res 51:546 (abs) (1972).

Lee, A.C., G.M. Angleton and J. Simpson. Relative frequencies of missing teeth in beagles exposed to cobalt-60 gamma rays during periods of growth and development. Radiat Res 67:525 (abs) (1976).

Lee, A.C. and W.D. Carlson. Reproduction in the beagle following irradiation of the ovaries. Radiat Res 25:210 (abs) (1965).

Lee, A.C. and W.D. Carlson. The histopathology of beagle ovaries after acute irradiation of the individual gonads. Radiat Res 31:632 (abs) (1967).

Lee, A.C., S.A. Benjamin, G.M. Angleton and R.D. Phemister. Ocular lesions in beagles after whole-body irradiation at various prenatal and postnatal ages. Radiat Res 74:512 (abs) (1978).

Lee, A.C. and R.D. Phemister. Eye lesions in beagles after prenatal or neonatal irradiation. Radiat Res 59:252 (abs) (1974).

McLeod, F.D. Multichannel pulse Doppler techniques. pp 85-107. In: Cardiovascular Applications of Ultrasound, R.S. Reneman, Ed. American Elsevier, NY (1974).

McLeod, F.D. and M. Anliker. A multiple gate pulse Doppler flow meter. Proc IEEE Ultrason Symp, Miami Beach, Fla, p 71 (abs) (1971).

McLeod, F.D., R.E. Daigle, C.W. Miller, R.J. Morgan and M.B. Histand. A digital Doppler velocity profile meter. 11th Ann Rocky Mount Bioeng Symp, USAF Academy, Colo, BM 74 312:55-60 (1974).

Michaelson, S.M., J.N. Shively, I.C. Haydock and J.W. Howland. Radiation induced changes in the properdin system of the dog: A critical analysis of the general problem. Radiat Res 28:60 (1966).

Miller, C.W. Theoretical and clinical evaluation of pulsed Dopplers. IEEE Ultrasonics Symp, Miami Beach, Fla, p 50 (abs) (1971).

Miller, C.W. Hemodynamics. In: CRC Handbook of Physiology in Aging, E.J. Masoro, Ed. CRC Press Inc. (1981).

Miller, C.W., D.W. Baker, D.E. Strandness and F.D. McLeod,Jr. Clinical evaluation of pulsed Dopplers. 4th Ann Bioeng Symp, Seattle, Wash, p 4 (abs) (1970).

Miller, C.W., M.O. Dennis, A.C. Lee and R.C. Nealeigh. Evaluation of valvular function in beagle dogs using echocardiography. Biomed Sci Instrum 14:13-18 (1978).

Miller, C.W. and M.B. Histand. An evaluation of the measurement of flow rate using a pulsed Doppler velocity meter. 25th Ann Conf Eng Med Biol, Bal Harbor, Fla, p 36 (abs) (1972).

Miller, C.W. and M.B. Histand. Nontraumatic measurement of blood flow, velocity, and wall motion in the thoracic aorta of dogs. Digest of the 10th Int Conf Med Biol Eng, Dresden, Germany, p 319 (abs) (1973).

Miller, C.W., M.B. Histand, R.K. Brooks, R.D. Brewster and F.D. McLeod,Jr. The chronic measurement of local flow properties in the abdominal aorta of dogs. Med Res Eng 11:17-23 (1972).

Miller, C.W., M.B. Histand, G.E. Hokanson, F.D. McLeod,Jr. and R.E. Daigle. Atherosclerosis and its effects on thoracic aorta wall motion and peripheral blood velocity patterns. IEEE Trans Sonics Ultrason, Monterey, Calif, p 10 (abs) (1973).

Miller, C.W., M.B. Histand and F.D. McLeod,Jr. The chronic measurement of local flow properties in the abdominal aorta of dogs. Med Res Eng 11:17-23 (1972).

Miller, C.W., R.C. Nealeigh and M.B. Histand. The effect of arterial location upon arterial velocity distributions. Biomed Sci Instrum 9:129-132 (1972).

Miller, C.W. and R.C. Nealeigh. Echocardiographic assessment of normal and abnormal valvular function in beagles. Proc 23d Ann Conf Am Inst Ultrasound Med, San Diego, Calif (abs) (1978).

Miller, C.W. and W.J. Tietz. Aortic ejection time and pulse wave velocity alterations with age in dogs. Proc Fed Am Soc Exp Biol 26:668 (abs) (1967).

Miller, C.W., W.J. Tietz and G.E. Smith. Data contribution to D.K. Detweiler, p 244 Chap 11: Cardiovascular system. In: The Beagle as an Experimental Dog, A.C. Andersen, Ed., Iowa State Univ Press, Ames, Iowa (1970).

Miller, C.W., W.E. Wingfield and J. Boon. Applications of ultrasound in veterinary diagnostics in a veterinary teaching hospital. Biomed Sci Instrumen. (In press).

Miller, G.K. and S.A. Benjamin. Quantitative alterations of thymic development in irradiated canine fetuses. Radiat Res 91:294 (abst) (In Press).

Miller, G.K. and S.A. Benjamin. Radiation-induced alterations in prenatal lymphoreticular development in the beagle dog. I. Quantitative alterations in thymic development. Lab Invest (submitted).

Miller, G.K. and S.A. Benjamin. Radiation-induced alterations in prenatal lymphoreticular development in the beagle dog. II. Morphological alterations in developing lymphoid organs. Lab Invest (submitted).

Montgomery, D.L. and A.C. Lee. Brain damage in the epileptic Beagle dog. Vet Pathol (submitted) (1982).

Morgan, R.J., J.W. Steadman and P.D. Lambert. Measurement of the change in the normal canine EEG with age. J Electroencephalogr Clin Neurophysiol 34:409-418 (1973).

Morris, R.L., M.B. Histand and C.W. Miller. The resolution of the ultrasound pulsed Doppler for blood velocity measurements. J Biomech 6:701-710 (1973).

Nealeigh, R.C., R.J. Garner, R.J. Morgan, H.A. Cross and P.D. Lambert. The effect of microwave on Y-maze learning in the white rat. J Microwave Power 6:49-54 (1971).

Nealeigh, R.C. and C.W. Miller. A venous pulse Doppler catheter-tip flowmeter for measuring arterial blood velocity, flow and diameter in deep arteries. Biomed Sci Instrum 11:7-10 (1975).

Nealeigh, R.C. and C.W. Miller. A venous pulse Doppler catheter-tip flowmeter for measuring arterial blood velocity, flow and diameter in deep arteries. ISA Trans 15:84-87 (1976).

Nealeigh, R.C. and C.W. Miller. Determination of renal artery blood flow in beagles using an ultrasonic esophageal probe. Proc 23rd Ann Conf Inst Ultrasound Med, San Diego, Calif (abs) (1978).

Nealeigh, R.C., C.W. Miller and F.D. McLeod. Measurement of hemodynamic properties in the abdominal aorta and iliac artery via an intravenous catheter-tip probe. Proc 20th Ann Conf Am Inst Ultrasound Med, Winston-Salem, NC, p 77 (abs) (1975).

Nealeigh, R.C., C.W. Miller and F.D. McLeod,Jr. A venous ultrasound catheter-tip technique for evaluation of arterial hemodynamics. J Appl Physiol 41:946-952 (1976).

Nett, T.M., A.M. Akbar, R.D. Phemister, P.A. Holst, L.E. Reichert and G.D. Niswender. Levels of luteinizing hormone, estradiol and progesterone in serum during the estrous cycle and pregnancy in the beagle bitch. Proc Soc Exp Biol Med 148:134-139 (1975).

Norrdin, R.W. Animal model of human disease: Renal Osteodystrophy in dogs with radiation nephropathy. Amer J Path 103:466-469 (1981).

Norrdin, R.W. Density and composition of trabecular and cortical bone in chronic renal failure in perinatally irradiated dogs. Lab Invest 32:453 (abs) (1975).

Norrdin, R.W. and J.S. Arnold. Comparison of ^{47}Ca accumulation in samples of trabecular and cortical bone and its retention in ribs, humerus and femur. In: Proc 3d Internatl Workshop on Bone Histomorphometry. Metabolic Bone Disease and Related Research. (In Press).

Norrdin, R.W., P. Bordier and C.W. Miller. Trabecular bone morphometry in beagles with chronic renal failure. Virchows Arch (Pathol Anat and Histol) 375:169-183 (1977).

Norrdin, R.W., C.W. Miller, C.A. LoPresti, A. Taylor and J. Arnold. Clinical studies, Ca balance, ^{47}Ca absorption and duodenal Ca binding activity in beagles with radiation induced glomerulosclerosis and loss of outer cortical nephrons. J Clin Invest (in press) (1979).

Norrdin, R.W., C.W. Miller, A.W. Taylor, J.S. Arnold and C.A. LoPresti. Observations on calcium metabolism, ^{47}Ca absorption and duodenal calcium binding activity in chronic renal failure: Studies in beagles with radiation-induced nephropathy. Amer J Vet Res 41(4):510-515 (1980).

Norrdin, R.W., R.D. Phemister, R.S. Jaenke and C.A. LoPresti. Density and composition of trabecular and cortical bone in perinatally irradiated beagles with chronic renal failure. Calcif Tiss Res 24:99-104 (1977).

Norrdin, R.W. and M.S. Shih. Profiles of cortical remodeling sites in longitudinal rib sections of beagles with chronic renal failure and parathyroid hyperplasia. (In preparation) (1981).

Norrdin, R.W., F. Villafane and C.A. LoPresti. Haversian remodeling activity in various bones of beagles and the effect of chronic renal failure. In: Bone Histomorphometry, 2nd Internatl Workshop. P.J. Meunier, Ed. Armour-Montagu, Paris, pp 171-178 (1977).

Norrdin, R.W., F.A. Villafane and C.A. LoPresti. On the correlation of bone remodeling parameters with parathyroid gland weight and bone density in beagles with experimental chronic renal failure. In: Proc 3d Internatl Workshop on Bone Histomorphometry, Metabolic Bone Disease and Related Research. (Abs) (In press).

Nyland, T.G., R.D. Park, J.C. Lattimer, J.L. Lebel and C.W. Miller. Grey-scale ultrasonography of canine abdomen. Vet Radiol (In Press).

Ojerio, A.D., R.W. Norrdin and R.S. Jaenke. Morphometric and ultrastructural evaluation of hyperparathyroidism in dogs with experimentally induced chronic renal failure. Lab Invest 32:453 (abs) (1975).

Ojerio, A.D., R.W. Norrdin and R.S. Jaenke. Parathyroid hyperplasia in chronic renal failure in perinatally irradiated beagles. Lab Invest 32:453 (abs) (1975).

Park, R.D., T.G. Nyland, J.C. Lattimer, C.W. Miller and J.L. Lebel. Beta mode grey-scale ultrasound: Imaging artifacts and interpretation principles. Vet Radiat 22:5 (1981).

Pettus, D. and G.M. Angleton. Comparative reproductive biology of Montane and Piedmont chorus frogs. Evolution 21:500-507 (1967).

Phemister, R.D. Non-neurogenic reproductive failure in the bitch. Vet Clin North Am 4:573-586 (1974).

Phemister, R.D., R.J. Garner, J.N. Shively and W.J. Tietz. The radiosensitivity of the developing beagle. pp 395-406. In: Radiation Biology of the Fetal and Juvenile Mammal. M.R. Sikov and D.D. Mahlum, Eds. USAEC, Div Tech Inform (1969).

Phemister, R.D., P.A. Holst and R.J. Garner. Age variations in radiosensitivity of the developing beagle. I. Prenatal radiosensitivity. p 170. In: Abstracts of 4th Int Congr Radiat Res, France (abs) (1970).

Phemister, R.D., P.A. Holst and A.C. Lee. Irradiation of the canine conceptus: teratogenic, lethal and growth-retarding effects. p 311-323. In: The Laboratory Animal in Drug Testing, A. Spiegel, Ed. Gustav-Fischer, Verlag, Stuttgart, Germany (1973).

Phemister, R.D., P.A. Holst, J.S. Spano and M.L. Hopwood. Time of ovulation in the beagle bitch. Biol Reprod 8:74-82 (1973).

Phemister, R.D., R.S. Jaenke and R.W. Norrdin. The renal effects of the perinatal gamma-irradiation in the beagle. Radiat Res 59:136 (abs) (1974).

Phemister, R.D., J.N. Shively and S. Young. The effects of gamma irradiation on the postnatally developing canine cerebellar cortex. I. Effects of single sublethal exposures. J Neuropath Exp Neurol 28:128-138 (1969).

Phemister, R.D., J.N. Shively and S. Young. The effects of gamma irradiation on the postnatally developing canine cerebellar cortex. II. Sequential histogenesis of radiation-induced changes. J Neuropath Exp Neurol 28:128-138 (1969).

Phemister, R.D., R.W. Thomassen, R.W. Norrdin and R.S. Jaenke. Renal failure in perinatally irradiated beagles. Radiat Res 55:399-410 (1973).

Phemister, R.D. and S. Young. The postnatal development of the canine cerebellar cortex. J Comp Neurol 134:243-254 (1968).

Reagan, T.R., C.W. Miller and D.E. Strandness. Transcutaneous measurement of femoral artery flow. J Surg Res 11:477-482 (1971).

Rose, D., P. Lambert, R. Morgan and R. Garner. Auditory acuity in the beagle measured by EEG provoked potential. J Aud Res 10:151 (1970).

Sansom, B.F. and R.J. Garner. The metabolism of radium in dairy cows. Biochem J 99:677-681 (1966).

Severin, G.A., M.M. Benjamin and E.A. Corley. The acute abdomen. Am Anim Hosp Assoc Proc 36th Ann Mtg, Washington, DC, pp 217-231 (1969).

Shively, J.N. and G.P. Epling. Early changes in the fine structure of the thyroid of midlethally irradiated dogs. Radiat Res 37:71-82 (1969).

Shively, J.N. and G.P. Epling. Fine structure of the thyroid gland of young dogs. Am J Vet Res 30:219-228 (1969).

Shively, J.N. and G.P. Epling. Fine structure of the canine eye: iris. Am J Vet Res 31:713-722 (1969).

Shively, J.N., G.P. Epling and R. Jensen. Fine structure of the canine eye: retina. Am J Vet Res 31:1339-1359 (1970).

Shively, J.N., C. Feldt and D. Davis. Fine structure of formed elements in canine blood. Am J Vet Res 30:893-905 (1969).

Shively, J.N. and R.D. Phemister. Fine structure of the iris of dogs manifesting heterochromia iridis. Am J Ophthalmol 66:1152-1162 (1968).

Shively, J.N. and R.D. Phemister. Incomplete maturation of iridal pigment in heterochromia iridum. Proc 26th Ann Mtg Electron Microsc Soc Am (abs) (1968).

Shively, J.N., R.D. Phemister and G.P. Epling. Alterations in the fine structure of the retina of irradiated dogs. Proc 3d Int Congr Radiat Res, Italy, p 202 (abs) (1966).

Shively, J.N., R.D. Phemister and G.P. Epling. Alterations in the fine structure of the mature retina of dogs irradiated as neonates. Exp Eye Res 6:278-282 (1967).

Shively, J.N., R.D. Phemister and G.P. Epling. Sequence of changes in the fine structure of the retina of dogs irradiated during retinal maturation. Proc 25th Ann Mtg Electron Microsc Soc Am (abs) (1967).

Shively, J.N., R.D. Phemister and G.P. Epling. Demonstration of radiation induced changes in the fine structure of the canine retina. Proc 4th Eur Reg Conf Electron Microsc, Rome, Italy, pp 571-575 (1968).

Shively, J.N., R.D. Phemister and G.P. Epling. Fine structure changes in photoreceptor cells after exposure to ionizing radiation during retinal maturation. Proc 5th Int Congr Photobiol (abs) (1968).

Shively, J.N., R.D. Phemister and G.P. Epling. Fine structure of the thyroid epithelium of young dogs treated with thyrotropin. Am J Vet Res 30:229-241 (1969).

Shively, J.N., R.D. Phemister and G.P. Epling. Radiation induced cellular and subcellular morphologic alterations in the developing and in the mature mammalilan eye. pp 493-510. In: Radiation Biology of the Fetal and Juvenile Mammal. M.R. Sikov and D.D. Mahlum, Eds. USAEC, Div Tech Inform (1969).

Shively, J.N., R.D. Phemister, G.P. Epling and R. Jensen. Pathogenesis of radiation-induced retinal dysplasia. Invest Ophthalmol 9:888-900 (1970).

Shively, J.N., R.D. Phemister, G.P. Epling and R. Jensen. Dose relationships of pathologic alterations in the developing retina of irradiated dogs. Am J Vet Res 33:2121-2134 (1972).

Stara, J.F. and E. Berman. Development of an outdoor feline colony for long-term studies in radiobiology. Lab Anim Care 17:81-92 (1967).

Steadman, J.W., R.J. Morgan and P.D. Lambert. Determination of the developmental stage of the brain. Biomed Sci Instrum 7:87 (1970).

Stephens, L.C., R.W. Norrdin, S.A. Benjamin and C.E. Peterson. Thyroid disease in beagles: comparison with human thyroid disease. Lab Invest 40:50 (abs) (1979).

Stephens, L.C., W.J. Saunders and R.S. Jaenke. Ectopic thyroid carcinoma with metastases in a Beagle dog. Vet Pathol 19:669-675 (1982).

Stuart, B.P., R.D. Phemister and R.W. Thomassen. Glomerular lesions associated with proteinuria in clinically healthy dogs. Vet Pathol 12:125-144 (1975).

Thake, D.C., N.F. Cheville and R.K. Sharp. Ectopic thyroid adenomas at the base of the heart of the dog. Vet Pathol 8:421-432 (1971).

Thomassen, R.W., G.M. Angleton, A.C. Lee, R.D. Phemister and S.A. Benjamin. Neoplasms in dogs receiving low level gamma radiation during pre- and post-

natal development. In: Late Biological Effects of Ionizing Radiation, Vol II, pp 189. IAEA-SM-224/214. Vienna, Austria (1978).

Tietz, W.J., M.M. Benjamin and G.M. Angleton. Anemia and cholesterolemia during estrus and pregnancy in the beagle. Am J Physiol 212:693-697 (1967).

Tietz, W.J., R.D. Phemister, B.P. Stuart, G.E. Smith and R.J. Garner. Effects of X-irradiation on the implanting canine embryo. Radiat Res 43:554-560 (1970).

Tietz, W.J. and W.G. Seliger. Temporal relationships in early canine embryogenesis. Anat Rec 157:333 (abs) (1967).

Tietz, W.J., G.E. Smith and C.W. Miller. Heat loss and activity of pups during cold exposure. J Am Vet Med Assoc 150:1308 (abs) (1967).

Tietz, W.J., G.E. Smith, B.P. Stuart, R.D. Phemister and R.J. Garner. Effects of irradiation of the beagle embryo prior to completion of organogenesis. Radiat Res 31:653 (abs) (1967).

Villafane, F.A., R W. Norrdin, C.A. LoPresti and D. Kimmel. Bone remodeling in chronic renal failure in perinatally irradiated beagles. Calcif Tissue Res 23:171-178 (1977).

Wagner, M.T. and R.J. Garner. The influence of prenatal gamma irradiation on postnatal enzyme patterns in the beagle. Radiat Res 35:495 (abs) (1968).

Wagner, M.T.Jr. and R.J. Garner. The effect of prenatal gamma irradiation on the postnatal enzyme development in the beagle. Radiat Res 46:380-393 (1971).

Wanderer, A.A., E.F. Ellis, J.B. Raffa and G.M. Angleton. Double antigen stimulation of histamine release from human leukocytes. J Allergy Clin Immunol 45:127 (abs) (1970).

Wilke, W.L., R.D. Phemister and R.S. Jaenke. Neonatal irradiation nephropathy in the growing dog. I. Renal morphological and functional adaptations following neonatal, sublethal, whole body irradiation. Radiat Res 78:72-81 (1979).

Wilke, W.L., R.S. Jaenke and R.D. Phemister. Neonatal irradiation nephropathy in the growing dog. II. Plasma renin activity and arterial pressure following neonatal, sublethal, whole-body irradiation. Radiat Res 78:61-71 (1979).

Wingfield, W.E., J.A. Boon and C.W. Miller. Atrial fibrillation in the dog. J Amer Vet Med Assoc (In press).

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APPENDICES

STATUS OF ALL SEGMENT III BEAGLES

The appendices list the status of all dogs on the CRHL study as of December 31, 1982. The dogs which died in 1982 are identified by diagnoses in brackets as most have not received final confirmation. Pertinent statistics for each dog are followed by their live/dead status and diagnoses for dead dogs. These diagnoses are based, in many cases, on clinical diagnoses, gross necropsy findings, and preliminary histopathological evaluation, and represent the cause of death and/or principal disease(s) recognized. The understanding of the evolution of, and the diagnostic criteria for, some diseases in this colony (for example, endocrine and renal disorders) are still evolving. Furthermore, some neoplastic diseases present diagnostic problems for which further studies are warranted to identify specific cell and tissue types. Therefore, this listing of diagnoses is not intended to be the final word on these dogs. It is intended to be a working file for interim analysis at this stage of the study. As new techniques are brought to bear on the problem, and as criteria for inclusion of dogs in certain disease categories are developed, some diagnoses are expected to be added to or revised. With this kept in mind, the appendices can serve as a useful record both within the laboratory and for other scientists interested in the data from this experiment.

Appendix I lists all the dogs identified as being part of the sacrifice series portion of the experiment. Since most of these dogs are euthanatized at predetermined ages, major diseases are usually not present and no disease diagnoses are given. Appendix II lists all dogs which have died or been euthanatized and thus are considered to be part of the life-span portion of the study. Included are pertinent diagnostic comments on these dead dogs.

The diagnoses in brackets represent those dogs which died during 1982 and are based primarily on gross findings.

APPENDIX I STATUS OF SEGMENT III SACRIFICE STUDY DOGS AS OF DEC. 31, 1982.

SHAM - IRRADIATED CONTROLS

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
04511	365dpp	00	F		5.49
04513	365dpp	00	F		11.43
04689	365dpp	00	M		5.45
04844	365dpp	00	M		11.90
05169	70dpp	00	F		11.49
05731	365dpp	00	F		11.53
05734	365dpp	00	M		11.54
05773	2dpp	00	M		8.31
05893	70dpp	00	M		11.52
05896	70dpp	00	M		8.26
06011	2dpp	00	F		5.22
06075	2dpp	00	F		8.18
06092	70dpp	00	F		5.46
06093	70dpp	00	F		8.17
06095	70dpp	00	M		11.42
06346	28dpc	00	F		5.34
06348	28dpc	00	F		11.32
06367	2dpp	00	F		8.10
06371	2dpp	00	M		5.35
06402	365dpp	00	F		8.39
06405	365dpp	00	F		5.33
06408	365dpp	00	M	13.79	
06541	8dpc	00	F		8.35
06542	8dpc	00	F		11.70
06544	8dpc	00	M		11.70
06576	70dpp	00	M		5.29
06611	28dpc	00	F		8.33
06613	28dpc	00	F		11.44
06615	28dpc	00	F		5.28
06616	28dpc	00	M		11.25
06727	55dpc	00	F		11.61
06802	55dpc	00	F		8.22
06805	55dpc	00	F		11.79
07083	28dpc	00	M		8.44
07157	70dpp	00	M		5.20
07345	365dpp	00	F		5.24
07349	365dpp	00	M		5.36
07350	365dpp	00	M		8.38
07685	55dpc	00	M		11.51
07688	55dpc	00	M		5.28
08090	28dpc	00	F	13.25	
08092	28dpc	00	F		8.43
08094	28dpc	00	M		5.19
09034	70dpp	00	F		5.26
09314	8dpc	00	F		5.20
09357	28dpc	00	F	12.87	

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
09358	28dpc	00	M		11.22
09951	365dpp	00	F		8.21
09952	365dpp	00	F	12.74	
10425	55dpc	00	F		8.43
10429	55dpc	00	M		5.16
10470	70dpp	00	F		11.14
10471	70dpp	00	F	12.58	
10472	70dpp	00	F		8.41
10474	70dpp	00	M	12.58	
10505	2dpp	00	F		5.24
10508	2dpp	00	M		11.13
10549	55dpc	00	M		11.12
10645	28dpc	00	M		8.36
10801	70dpp	00	F		8.43
10814	2dpp	00	M		8.20
10886	28dpc	00	M	12.47	
11008	8dpc	00	F		8.45
11009	8dpc	00	M		11.10
11012	70dpp	00	F	12.45	
11014	70dpp	00	M		8.46
11016	70dpp	00	M		5.20
11166	8dpc	00	F		8.43
11299	2dpp	00	F		11.29
11300	2dpp	00	F		5.34
11484	8dpc	00	M		5.41
11955	365dpp	00	M		8.39
12011	28dpc	00	F		5.39
12456	8dpc	00	M	12.04	
12457	8dpc	00	M		8.43
12458	8dpc	00	M	12.04	
12676	2dpp	00	F		11.17
12679	2dpp	00	M		8.43
12902	8dpc	00	F		5.20
12903	8dpc	00	F		11.12
12905	8dpc	00	M		5.24
13251	55dpc	00	F		5.21
13252	55dpc	00	F	11.88	
13255	55dpc	00	M	11.88	
13623	365dpp	00	M		8.46
13715	2dpp	00	M		11.10
13891	55dpc	00	F		5.09
13893	55dpc	00	M		8.40
13908	28dpc	00	M		5.44
13909	28dpc	00	M		8.38
13910	28dpc	00	M	11.72	
15250	2dpp	00	M	11.29	
15251	2dpp	00	M		5.39
15403	55dpc	00	F		8.38
15404	55dpc	00	F	11.24	
15713	55dpc	00	M		8.46
15714	55dpc	00	M		5.35

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
17284	8dpc	00	F	10.43	
17285	8dpc	00	M		8.14
17287	8dpc	00	M		5.20

DOGS IRRADIATED AT 8 DAYS POSTCOITUS

06675	8dpc	16	M		8.26
06678	8dpc	16	M		11.22
06994	8dpc	16	F		5.08
07314	8dpc	16	M		5.25
10034	8dpc	16	M		5.10
10258	8dpc	16	F		5.10
10259	8dpc	16	F		8.12
10904	8dpc	16	M	12.47	
11140	8dpc	16	F		5.25
11265	8dpc	16	F		5.23
12107	8dpc	16	F		8.41
12112	8dpc	16	M	12.17	
12493	8dpc	16	F		8.43
12495	8dpc	16	F		11.22
12496	8dpc	16	M		8.43
13730	8dpc	16	F		11.10
14085	8dpc	16	M		5.17
14335	8dpc	16	F		5.28
14629	8dpc	16	F		11.17
15475	8dpc	16	M		5.40
15791	8dpc	16	F	11.12	
15794	8dpc	16	M	11.12	
15795	8dpc	16	M	11.12	
15797	8dpc	16	M	11.12	
16119	8dpc	16	F	10.90	
16129	8dpc	16	F	10.90	
16378	8dpc	16	M	10.84	
16379	8dpc	16	M	10.84	
16739	8dpc	16	M		8.15
16866	8dpc	15	F	10.66	
16868	8dpc	15	M	10.66	
16889	8dpc	16	F	10.63	
17028	8dpc	16	M		5.33
07147	8dpc	79	F		5.19
07148	8dpc	79	F		8.33
07587	8dpc	75	M		5.29
09517	8dpc	79	F		11.19
11708	8dpc	82	M		8.36
11800	8dpc	82	M		11.18
11801	8dpc	82	M	12.30	
11928	8dpc	82	F		5.38
11932	8dpc	82	M		5.38
12390	8dpc	82	F		11.16

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
12779	8dpc	77	F		8.41
12848	8dpc	81	F		8.39
14538	8dpc	93	M		8.37
15286	8dpc	80	M	11.27	
15701	8dpc	80	F	11.16	
16265	8dpc	79	F		5.42
16266	8dpc	79	F	10.86	
16267	8dpc	79	F	10.86	
16268	8dpc	79	F	10.86	
16269	8dpc	79	M		5.34
16270	8dpc	79	M		8.28
16494	8dpc	79	F		5.30
16749	8dpc	78	M		5.21
16848	8dpc	78	F	10.67	
16849	8dpc	78	M	10.67	
16955	8dpc	79	M		5.25
17330	8dpc	81	F		5.19
17333	8dpc	81	M	10.41	

DOGS IRRADIATED AT 28 DAYS POSTCOITUS

06068	28dpc	16	F		11.41
06261	28dpc	16	M		5.36
07602	28dpc	16	M		5.30
08512	28dpc	15	F		11.11
08514	28dpc	15	F		5.26
08517	28dpc	15	M		5.26
09947	28dpc	16	M		11.21
12003	28dpc	16	F		8.35
12943	28dpc	16	F		5.23
13468	28dpc	16	M		8.41
13469	28dpc	16	M		11.37
13555	28dpc	16	M		11.14
14866	28dpc	16	F		5.36
15084	28dpc	16	M		8.46
15087	28dpc	16	M		5.37
15448	28dpc	16	F		5.49
15591	28dpc	16	M		8.49
16159	28dpc	16	M		5.18
16254	28dpc	16	F		8.14
16706	28dpc	16	F		5.31
16854	28dpc	16	F		8.11
16856	28dpc	16	F	10.67	
17126	28dpc	16	M	10.50	
05860	28dpc	80	M		8.27
05861	28dpc	80	M		11.43
06756	28dpc	80	M		11.73
06807	28dpc	80	F		5.27
07847	28dpc	77	F		8.26

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
07850	28dpc	77	M		5.25
08476	28dpc	79	F		8.35
08478	28dpc	79	F		11.44
08482	28dpc	79	M		11.34
10502	28dpc	79	M	12.58	
10646	28dpc	80	F		11.10
10966	28dpc	79	F		11.10
10968	28dpc	79	M	12.45	
10969	28dpc	79	M		8.36
11404	28dpc	82	M		5.32
11405	28dpc	82	M	12.39	
12019	28dpc	81	F	12.21	
12434	28dpc	79	F	12.05	
12435	28dpc	79	M	12.05	
12437	28dpc	79	M		5.31
14001	28dpc	94	F		8.40
14003	28dpc	94	F	11.67	
14982	28dpc	80	M		8.47
15173	28dpc	80	F		5.36
15176	28dpc	80	M		5.36
15208	28dpc	79	M	11.29	
15306	28dpc	81	F	11.27	
15420	28dpc	80	F		5.33
15425	28dpc	80	M	11.23	
15465	28dpc	79	F	11.21	
15764	28dpc	81	F		5.36
15767	28dpc	81	M		5.36
16179	28dpc	79	F	10.88	
16180	28dpc	79	M	10.88	
16356	28dpc	80	F	10.84	
16695	28dpc	79	F		5.23

DOGS IRRADIATED AT 55 DAYS POSTCOITUS

05776	55dpc	15	M		8.35
06396	55dpc	16	F		8.32
06400	55dpc	16	M		5.37
07017	55dpc	16	M		11.63
07296	55dpc	16	M		11.55
09912	55dpc	16	M	12.76	
09915	55dpc	16	M		5.16
10591	55dpc	16	F		8.46
11217	55dpc	16	M		8.44
11901	55dpc	16	M	12.27	
11903	55dpc	16	M		11.15
12127	55dpc	16	F		5.40
12129	55dpc	16	M		5.41
12991	55dpc	16	M	11.92	
12992	55dpc	16	M		8.44

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
12993	55dpc	16	M		5.24
13032	55dpc	16	F		8.44
13036	55dpc	16	M		5.23
13037	55dpc	16	M		8.44
14101	55dpc	15	F		8.44
14102	55dpc	15	F		5.14
14105	55dpc	15	M	11.62	
14483	55dpc	15	F		5.44
14718	55dpc	16	F		11.15
14863	55dpc	16	F		5.42
14960	55dpc	15	F		5.32
05642	55dpc	78	F		11.58
06721	55dpc	79	F		8.19
06723	55dpc	79	M		5.21
07163	55dpc	79	M		5.20
08148	55dpc	79	M		5.35
08368	55dpc	78	F		5.31
10044	55dpc	81	M		8.17
10222	55dpc	79	F		5.12
10370	55dpc	79	F		11.08
10371	55dpc	79	F		5.17
10374	55dpc	79	F		8.22
11067	55dpc	79	F		8.45
11068	55dpc	79	M		5.49
11098	55dpc	81	M		5.18
11870	55dpc	81	F		11.15
11872	55dpc	81	M		11.36
11996	55dpc	82	M		8.36
13667	55dpc	90	F	11.80	
13981	55dpc	89	M		8.35
14252	55dpc	90	F		5.28
14256	55dpc	90	M		11.17
14314	55dpc	88	M		8.36
14759	55dpc	78	F		5.35
14898	55dpc	80	F		8.43
14899	55dpc	80	M		11.11
14900	55dpc	80	M	11.37	

DOGS IRRADIATED AT 2 DAYS POSTPARTUM

06272	2dpp	18	F		5.36
06364	2dpp	18	F		8.33
06934	2dpp	17	F		8.44
07257	2dpp	18	M		8.21
07259	2dpp	18	M		5.20
08941	2dpp	18	F		5.33
08942	2dpp	18	M		11.30
10183	2dpp	18	F		5.12
10497	2dpp	18	M		8.18
11739	2dpp	17	F		8.45

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
11916	2dpp	17	F		5.39
11968	2dpp	17	M		5.41
12113	2dpp	17	F		11.26
12117	2dpp	17	F		5.41
12118	2dpp	17	M		8.41
13721	2dpp	18	M		5.12
13723	2dpp	18	M		11.10
14034	2dpp	18	F		8.47
14039	2dpp	18	M		11.18
14165	2dpp	18	F		11.12
14167	2dpp	18	M		5.15
14400	2dpp	18	F		11.13
14493	2dpp	18	M	11.48	
15437	2dpp	18	M		5.42
17627	2dpp	18	M	10.24	
06561	2dpp	89	F		11.27
07741	2dpp	88	F		8.18
09226	2dpp	88	M		11.25
09923	2dpp	88	F		11.10
09926	2dpp	88	M		5.16
10066	2dpp	88	M		5.09
10311	2dpp	88	M		11.10
10313	2dpp	88	M		8.01
10943	2dpp	87	F		5.12
10947	2dpp	87	F		11.10
12079	2dpp	87	F	12.19	
12082	2dpp	87	M		5.38
12823	2dpp	90	F	11.95	
13457	2dpp	90	F	11.83	
13986	2dpp	90	F	11.67	
14027	2dpp	89	F		8.38
14029	2dpp	89	M		8.39
14030	2dpp	89	M	11.65	
14106	2dpp	89	F		5.33
14107	2dpp	89	F		8.44
14139	2dpp	89	F		5.47
14140	2dpp	89	F		5.16
14159	2dpp	90	M	11.59	
14321	2dpp	90	F		8.43
14596	2dpp	88	M		8.50
14965	2dpp	88	F		5.33
15193	2dpp	88	F	11.30	
15196	2dpp	88	M		5.40
15460	2dpp	88	F	11.21	
15573	2dpp	88	M	11.19	
15604	2dpp	88	M	11.18	
15609	2dpp	88	M		5.38

DOGS IRRADIATED AT 70 DAYS POSTPARTUM

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
05649	70dpp	82	M		5.45
05689	70dpp	82	F		8.36
05691	70dpp	82	M		11.57
06533	70dpp	83	M		8.31
07109	70dpp	82	F		5.20
07815	70dpp	81	M		11.49
09011	70dpp	83	M		11.24
0933[illegible]	70dpp	83	F		8.35
10347	70dpp	81	M	12.63	
11909	70dpp	82	M	12.27	
12054	70dpp	84	M		5.39
12057	70dpp	84	M		8.43
12173	70dpp	84	F		11.23
12175	70dpp	84	F		5.40
13191	70dpp	84	F		11.43
13230	70dpp	84	M		8.46
13360	70dpp	84	M		5.1[illegible]
13513	70dpp	84	F		8.4[illegible]
13514	70dpp	84	F		5.17
13517	70dpp	84	M	11.83	
14007	70dpp	82	F	11.67	
14384	70dpp	82	F		5.28
14389	70dpp	82	M		8.41
14656	70dpp	82	F	11.41	
14657	70dpp	82	F		11.16
14659	70dpp	82	F		8.47
14756	70dpp	82	M		5.35
15003	70dpp	82	F	11.33	
15004	70dpp	82	F		5.32
15219	70dpp	82	M	11.29	
15221	70dpp	82	M		5.39

DOGS IRRADIATED AT 365 DAYS POSTPARTUM

04475	365dpp	80	M		11.40
04557	365dpp	81	F		8.33
04600	365dpp	81	F		5.43
04602	365dpp	79	M		8.24
04611	365dpp	79	F		5.49
04664	365dpp	81	F		5.47
04667	365dpp	78	M		5.49
04676	365dpp	79	M		5.49
04739	365dpp	80	F		8.20
04772	365dpp	79	M		5.32
04888	365dpp	80	M		8.25
04892	365dpp	79	F		8.27
04917	365dpp	81	F		8.43
04975	365dpp	80	F		8.24

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE
05008	365dpp	79	M		11.47
06380	365dpp	84	M		8.33
06762	365dpp	81	M		8.29
06830	365dpp	82	M		8.39
07048	365dpp	80	F		5.16
07231	365dpp	81	F		11.55
07233	365dpp	80	M		5.21
08602	365dpp	79	M		11.30
09464	365dpp	87	F		5.16
10136	365dpp	90	F		5.23
10137	365dpp	88	M		5.13
10319	365dpp	88	F		8.24
10320	365dpp	88	M		5.19
10321	365dpp	87	M		11.10
10466	365dpp	86	M		11.14
10546	365dpp	87	M		8.47
10683	365dpp	88	M		8.36
10922	365dpp	81	F		8.37
10924	365dpp	79	M		5.13
10962	365dpp	77	M		5.10
11574	365dpp	79	M		5.47
12156	365dpp	80	M		8.39
12161	365dpp	79	F		5.40
12165	365dpp	79	M		5.41
12688	365dpp	77	F		11.17
12692	365dpp	77	M	11.98	
13149	365dpp	81	F		8.42
13151	365dpp	79	M		8.48
13155	365dpp	80	F		5.22
13402	365dpp	80	F		5.17
14031	365dpp	80	F		8.38
14208	365dpp	80	F		11.19
14234	365dpp	81	F		11.18
14518	365dpp	79	F	11.47	
14548	365dpp	78	M	11.46	
14549	365dpp	79	M		8.37
14598	365dpp	81	F	11.44	
14944	365dpp	81	F		5.33
15051	365dpp	79	F	11.33	

APPENDIX II STATUS OF SEGMENT III LIFESPAN STUDY DOGS AS OF DEC. 31, 1982.

SHAM - IRRADIATED CONTROLS

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
04469	365dpp	00	F		14.04	[UNDETERMINED]
04470	365dpp	00	F		12.11	HYPOTHERMIA; THYROID ATROPHY
04471	365dpp	00	M		14.02	HYPOTHERMIA
04512	365dpp	00	F		11.02	HYPOTHYROIDISM
04514	365dpp	00	F		11.94	RENAL INFARCTION; IV DISC SYNDROME
04515	365dpp	00	M	14.99		
04516	365dpp	00	M		11.11	IV DISC SYNDROME; HYPOTHYROIDISM
04517	365dpp	00	M		3.43	UNDETERMINED
04686	365dpp	00	F	14.78		
04687	365dpp	00	F		11.69	PULMONARY THROMBOSIS; HEART FAILURE; CHRONIC RENAL DISEASE
04688	365dpp	00	F	14.78		
04841	365dpp	00	F	14.60		
04842	365dpp	00	M	14.60		
04843	365dpp	00	M		10.09	ADENOCARCINOMA, LUNG, WITH METASTASES
04845	365dpp	00	M	14.60		
04846	365dpp	00	M		11.73	TORSION, SMALL INTESTINE
05092	70dpp	00	F		13.23	RENAL INFARCTION; AORTIC AND PULMONARY THROMBOSIS
05093	70dpp	00	F		12.65	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES; HYPOTHYROIDISM
05095	70dpp	00	M		6.87	HYPERTHERMIA
05168	70dpp	00	F		8.36	CARCINOMA, MAMMARY GLAND, WITH METASTASES
05170	70dpp	00	F		6.33	HYPOTHYROIDISM
05171	70dpp	00	F		14.06	[PULMONARY EDEMA]
05173	70dpp	00	M	14.35		
05732	365dpp	00	F		12.57	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES; GLOMERULOSCLEROSIS, UREMIA
05770	2dpp	00	F		8.80	CONVULSIVE SEIZURES
05771	2dpp	00	F	14.07		
05772	2dpp	00	M	14.07		
05774	2dpp	00	M		6.07	UNDETERMINED
05891	70dpp	00	F		10.84	CONGESTIVE HEART FAILURE
05894	70dpp	00	M		12.87	CONGESTIVE HEART FAILURE
05895	70dpp	00	M		5.00	COR PULMONALE
06008	2dpp	00	F		0.35	COR PULMONALE
06010	2dpp	00	F		11.26	PULMONARY THROMBOSIS
06012	2dpp	00	F	13.92		
06014	2dpp	00	M		11.40	SEPTIC ENDOCARDITIS
06074	2dpp	00	F		10.82	CHRONIC RENAL DISEASE; PULMONARY THROMBOSIS
06076	2dpp	00	M		13.81	[UNDETERMINED]
06077	2dpp	00	M	13.89		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
06094	70dpp	00	M		13.74	[CONVULSIVE SEIZURE]
06197	8dpc	00	F	13.85		
06198	8dpc	00	M	13.85		
06199	8dpc	00	M	13.85		
06200	8dpc	00	M		0.20	PULMONARY HEMORRHAGE AND EDEMA
06345	28dpc	00	F	13.81		
06347	28dpc	00	F	13.81		
06349	28dpc	00	M	13.81		
06368	2dpp	00	F		11.84	RHINITIS, SINUSITIS
06369	2dpp	00	F		11.58	PYOMETRA WITH TOXEMIA
06370	2dpp	00	M		13.70	[HEMORRHAGIC ENTEROCOLITIS; ASPIRATION PNEUMONIA]
06372	2dpp	00	M	13.80		
06373	2dpp	00	M		9.97	CONVULSIVE SEIZURES
06403	365dpp	00	F		11.39	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
06404	365dpp	00	F		11.61	CONVULSIVE SEIZURES; ASPIRATION PNEUMONIA
06406	365dpp	00	F	13.79		
06407	365dpp	00	M	13.79		
06543	8dpc	00	M		7.99	CONVULSIVE SEIZURES
06545	8dpc	00	M		12.14	CONVULSIVE SEIZURES
06546	8dpc	00	M		9.69	TUMOR, PITUITARY; HYPERADRENOCORTICISM
06574	70dpp	00	F		10.40	HEMANGIOSARCOMA, HEART
06575	70dpp	00	F		7.05	TUMOR, PITUITARY; HYPERADRENOCORTICISM
06577	70dpp	00	M		6.67	CONVULSIVE SEIZURES
06578	70dpp	00	M		13.21	[HYPERADRENOCORTICISM]
06579	70dpp	00	M		10.03	FIBROSARCOMA, MAXILLA
06612	28dpc	00	F		3.18	ANESTHETIC DEATH
06614	28dpc	00	F		12.02	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
06728	55dpc	00	F		5.24	PULMONARY HEMORRHAGE AND EDEMA
06729	55dpc	00	F	13.65		
06730	55dpc	00	M		2.28	ANESTHETIC DEATH
06731	55dpc	00	M		12.69	[HYPOTHERMIA, GENERALIZED NEOPLASIA]
06732	55dpc	00	M	13.65		
06733	55dpc	00	M		8.19	HYPERTHERMIA
06801	55dpc	00	F	13.62		
06803	55dpc	00	F		8.50	HYPOTHYROIDISM
06804	55dpc	00	F		11.13	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
06806	55dpc	00	F		12.55	HYPERADRENOCORTICISM; CARCINOMA, PITUITARY
06967	70dpp	00	F	13.57		
06968	70dpp	00	F		11.16	RENAL AMYLOIDOSIS
06970	70dpp	00	M		12.67	[UNDETERMINED]
06971	70dpp	00	M		6.47	HEMORRHAGE, BRAIN STEM
07078	28dpc	00	F	13.50		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
07079	28dpc	00	F	13.50		
07080	28dpc	00	F	13.50		
07081	28dpc	00	M		10.67	CARCINOMA, PROSTATE, WITH METASTASES
07082	28dpc	00	M		10.83	CHOROID PLEXUS CARCINOMA, BRAIN
07156	70dpp	00	F		9.85	CHEMODECTOMA, HEART BASE; HEPATOCELLULAR CARCINOMA
07158	70dpp	00	M		9.39	CONVULSIVE SEIZURES; PITUITARY TUMOR
07159	70dpp	00	M		12.50	[RENAL FAILURE]
07160	70dpp	00	M		9.65	GRANULOMATOUS HEPATITIS; GRANULOMATOUS PLEURITIS
07208	365dpp		M		0.12	HEPATIC DEGENERATION; INTERSTITIAL PNEUMONIA
07209	365dpp	00	M		11.04	CONGESTIVE HEART FAILURE
07210	365dpp	00	M	13.46		
07344	365dpp	00	F		4.43	HYPOTHYROIDISM
07346	365dpp	00	F		10.76	PULMONARY THROMBOSIS
07347	365dpp	00	F		5.65	DIABETES MELLITUS
07348	365dpp	00	F		7.19	DIABETES MELLITUS
07683	55dpc	00	F		12.99	[MAST CELL SARCOMA]
07684	55dpc	00	F	13.35		
07686	55dpc	00	M		8.27	HYPOTHYROIDISM
07687	55dpc	00	M	13.35		
07837	70dpp	00	F		0.25	CANINE DISTEMPER
07839	70dpp	00	M		8.66	MALABSORPTION SYNDROME
08091	28dpc	00	F		11.31	MALIGNANT LYMPHOMA
08093	28dpc	00	M	13.25		
09035	70dpp	00	F		3.54	DIABETES MELLITUS
09036	70dpp	00	F	12.96		
09038	70dpp	00	M	12.96		
09039	70dpp	00	M		8.93	CONVULSIVE SEIZURES
09040	70dpp	00	M	12.96		
09307	8dpc	00	F		11.48	GASTRIC IMPACTION, GRAVEL
09308	8dpc	00	F	12.89		
09310	8dpc	00	F		11.72	WIDESPREAD THROMBOSIS AND INFARCTION
09313	8dpc	00	F		7.55	HEPATIC LIPIDOSIS, CAUSE UNKNOWN
09315	8dpc	00	F	12.89		
09316	8dpc	00	F		11.01	INTESTINAL PERFORATION, PERITONITIS; MALIGNANT LYMPHOMA
09317	8dpc	00	M	12.89		
09318	8dpc	00	M	12.89		
09319	8dpc	00	M	12.89		
09356	28dpc	00	F		6.72	CONVULSIVE SEIZURES
09954	365dpp	00	F		10.49	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
09955	365dpp	00	M	12.74		
10142	55dpc	00	F		9.70	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
10144	55dpc	00	M		9.75	HYDROCEPHALUS

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
10146	55dpc	00	M	12.68		
10147	55dpc	00	M		0.13	INANITION, CAUSE UNKNOWN
10426	55dpc	00	F	12.60		
10427	55dpc	00	F		9.69	THROMBOSIS, POSTERIOR VENA CAVA; HYPOTHYROIDISM
10428	55dpc	00	M		5.51	HYPOTHYROIDISM
10434	8dpc	00	F		8.56	CARCINOSARCOMA, MAMMARY GLAND WITH OSTEOSARCOMA
10435	8dpc	00	F		11.76	[TRANSITIONAL CELL CARCINOMA, URINARY BLADDER]
10436	8dpc	00	F	12.60		
10437	8dpc	00	M	12.60		
10438	8dpc	00	M	12.60		
10443	55dpc	00	F		8.98	CHRONIC RENAL DISEASE
10444	55dpc	00	F		4.28	CONVULSIVE SEIZURES
10446	55dpc	00	F		9.61	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM; GLOMERULOSCLEROSIS
10447	55dpc	00	M	12.59		
10448	55dpc	00	M	12.59		
10469	70dpp	00	F	12.58		
10473	70dpp	00	M		7.43	CHRONIC RENAL DISEASE
10504	2dpp	00	F		10.07	ENDOMETRITIS, SALPINGITIS, PERIOOPHORITIS
10506	2dpp	00	M	12.57		
10507	2dpp	00	M	12.57		
10509	2dpp	00	M	12.57		
10548	55dpc	00	M		4.07	HYPERTHERMIA
10550	55dpc	00	M	12.56		
10552	55dpc	00	M	12.56		
10553	8dpc	00	F	12.56		
10554	8dpc	00	F		8.89	CHRONIC RENAL DISEASE
10555	8dpc	00	F	12.56		
10556	8dpc	00	M	12.56		
10557	8dpc	00	M		0.77	UNDETERMINED
10576	2dpp	00	F		9.96	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
10577	2dpp	00	F		8.24	MALIGNANT PHEOCHROMOCYTOMA WITH METASTASES
10579	2dpp	00	F	12.55		
10580	2dpp	00	M		9.62	HYPOTHYROIDISM; THYROID ATROPHY
10627	70dpp	00	F	12.54		
10628	70dpp	00	F		12.51	[MALABSORPTION SYNDROME]
10629	70dpp	00	F	12.54		
10639	28dpc	00	F	12.53		
10640	28dpc	00	F		1.50	INANITION; AMAUROSIS
10643	28dpc	00	M		0.54	INANITION, ACHALASIA
10644	28dpc	00	M	12.53		
10800	70dpp	00	F		7.56	HYPOTHYROIDISM; CONVULSIVE SEIZURES
10802	70dpp	00	M	12.49		
10803	70dpp	00	M		7.21	CONVULSIVE SEIZURES
10805	70dpp	00	M		5.67	CONVULSIVE SEIZURES

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
10812	2dpp	00	F	12.49		
10813	2dpp	00	M		11.50	[HYPOTHYROIDISM, THYROID ATROPHY]
10815	2dpp	00	M		10.13	SEPTICEMIA; HYPOTHYROIDISM; THYROID ATROPHY
10817	2dpp	00	M	12.49		
10881	28dpc	00	F		9.70	PYOMETRA
10882	28dpc	00	M		0.33	COR PULMONALE
10883	28dpc	00	M		8.90	MALABSORPTION SYNDROME
10884	28dpc	00	M		11.59	[MALABSORPTION SYNDROME]
10885	28dpc	00	M		7.46	MALABSORPTION SYNDROME
11006	8dpc	00	F		6.10	CONVULSIVE SEIZURES
11007	8dpc	00	F	12.45		
11010	8dpc	00	M	12.45		
11011	70dpp	00	F	12.45		
11015	70dpp	00	M		0.49	INANITION, ACHALASIA
11163	8dpc	00	F		11.85	[THROMBOSIS, TERMINAL AORTA]
11164	8dpc	00	F		8.74	CONVULSIVE SEIZURES
11165	8dpc	00	F		8.27	CHRONIC RENAL DISEASE; PULMONARY THROMBOSIS
11167	8dpc	00	M	12.43		
11194	365dpp	00	F	12.42		
11195	365dpp	00	F		10.04	ANAPLASTIC CARCINOMA, LUNG, WITH METASTASES
11197	365dpp	00	M	12.42		
11198	365dpp	00	M		10.44	MALIGNANT LYMPHOMA
11301	2dpp	00	F	12.41		
11303	2dpp	00	M	12.41		
11481	8dpc	00	F		7.29	CONVULSIVE SEIZURES
11482	8dpc	00	M		11.89	[HYPOTHYROIDISM; THYROID NEOPLASIA; CHRONIC RENAL DISEASE]
11734	28dpc	00	F		9.49	SEPTIC ENDOCARDITIS
11735	28dpc	00	F	12.31		
11736	28dpc	00	M	12.31		
11737	28dpc	00	M		6.13	EUTHANASIA, INTRACTABLE DOG
11954	365dpp	00	F	12.25		
11956	365dpp	00	M	12.25		
11957	365dpp	00	M	12.25		
12009	28dpc	00	F		7.21	HYPOTHYROIDISM
12010	28dpc	00	F		12.15	[METASTATIC NEOPLASIA]
12012	28dpc	00	M	12.21		
12013	28dpc	00	M		4.18	HYPOTHYROIDISM
12145	8dpc	00	F		11.25	[HYPOTHYROIDISM, THYROID ATROPHY]
12147	8dpc	00	F		2.09	HYPOTHYROIDISM
12149	8dpc	00	M	12.15		
12150	8dpc	00	M		0.04	COR PULMONALE
12280	2dpp	00	F		5.43	MALABSORPTION SYNDROME
12282	2dpp	00	F		10.62	MALIGNANT LYMPHOMA
12283	2dpp	00	F		8.79	AUTOIMMUNE HEMOLYTIC ANEMIA
12284	2dpp	00	M	12.10		
12285	2dpp	00	M	12.10		
12286	2dpp	00	M		0.10	INANITION, CAUSE UNKNOWN

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
12583	365dpp	00	F		10.79	PNEUMONIA
12584	365dpp	00	M		11.83	[MALIGNANT MELANOMA, WITH METASTASES]
12586	365dpp	00	M	12.00		
12678	2dpp	00	F	11.98		
12680	2dpp	00	M	11.98		
12904	8dpc	00	M		7.07	ADENOCARCINOMA, LUNG, WITH METASTASES
13027	2dpp	00	F		9.21	NECROTIZING CELLULITIS, NECK
13028	2dpp	00	F		0.04	COR PULMONALE
13045	55dpc	00	F	11.92		
13047	55dpc	00	M	11.92		
13048	55dpc	00	M	11.92		
13183	28dpc	00	F	11.90		
13184	28dpc	00	F		10.07	CARCINOMA, THYROID, WITH METASTASES
13187	28dpc	00	M	11.90		
13188	28dpc	00	M		6.75	DIABETES MELLITUS; HYPOTHYROIDISM
13189	28dpc	00	M		7.02	CONVULSIVE SEIZURES
13250	55dpc	00	F	11.88		
13253	55dpc	00	F	11.88		
13254	55dpc	00	M		5.97	CONVULSIVE SEIZURES
13621	365dpp	00	F		10.91	[HYPOTHYROIDISM, THYROID ATROPHY]
13622	365dpp	00	M		10.02	MALABSORPTION SYNDROME
13625	365dpp	00	M	11.81		
13626	365dpp	00	M		11.13	[IV DISC SYNDROME]
13713	2dpp	00	F	11.78		
13714	2dpp	00	F		10.19	SPONGIFORM DEGENERATION, MEDULLA, BRAIN
13755	28dpc	00	F	11.78		
13756	28dpc	00	F	11.78		
13757	28dpc	00	M		6.82	CONVULSIVE SEIZURES
13758	28dpc	00	M	11.78		
13892	55dpc	00	F		5.78	PYOMETRA
13894	55dpc	00	M	11.74		
13907	28dpc	00	F		7.65	HYPOTHYROIDISM
13911	28dpc	00	M		10.82	[UNDETERMINED]
13912	28dpc	00	M	11.72		
15247	2dpp	00	F	11.29		
15249	2dpp	00	M		5.66	CONVULSIVE SEIZURES
15252	2dpp	00	M	11.29		
15406	55dpc	00	M		6.69	CONVULSIVE SEIZURES
15407	55dpc	00	M		4.15	HYPOTHYROIDISM
15711	55dpc	00	M		0.06	HYPOTHERMIA, CAUSE UNKNOWN
17283	8dpc	00	F		5.84	ADENOCARCINOMA, WITH METASTASES, SITE OF PRIMARY UNKNOWN
17286	8dpc	00	M	10.43		
17288	8dpc	00	M	10.43		
18005	55dpc	00	F	9.96		
18006	55dpc	00	F	9.96		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
18007	55dpc	00	F		8.47	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
18330	70dpp	00	F	9.85		

DOGS IRRADIATED AT 8 DAYS POSTCOITUS

06676	8dpc	16	M		7.61	HYPOTHYROIDISM
06677	8dpc	16	M		1.73	UROLITHIASIS
06679	8dpc	16	M		11.23	MALIGNANT MELANOMA, ORAL CAVITY
06995	8dpc	16	F	13.55		
06997	8dpc	16	M	13.55		
06998	8dpc	16	M		7.36	HYPOADRENOCORTICISM
07312	8dpc	16	F	13.45		
07313	8dpc	16	F	13.45		
10032	8dpc	16	F		9.20	ADENOCARCINOMA, MAMMARY GLAND
10033	8dpc	16	M	12.70		
10035	8dpc	16	M	12.70		
10260	8dpc	16	M	12.65		
10261	8dpc	16	M		9.22	ADENOMA, PARATHYROID; HYPERCALCEMIA
10262	8dpc	16	M		9.08	CHRONIC RENAL DISEASE
10902	8dpc	16	F	12.47		
10903	8dpc	16	M		12.35	[MALIGNANT MELANOMA, WITH METASTASES]
10905	8dpc	16	M		11.49	[MALIGNANT LYMPHOMA]
10906	8dpc	16	M		2.40	INANITION, ACHALASIA
11139	8dpc	16	F		12.19	[DIABETES MELLITUS; BRONCHOPNEUMONIA]
11141	8dpc	16	F	12.43		
11142	8dpc	16	F		10.51	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
11143	8dpc	16	M	12.43		
11263	8dpc	16	F	12.41		
11264	8dpc	16	F		11.84	[PULMONARY NEOPLASIA]
11266	8dpc	16	M	12.41		
12108	8dpc	16	F		0.23	COR PULMONALE
12110	8dpc	16	M	12.17		
12111	8dpc	16	M	12.17		
12492	8dpc	16	F		9.90	MALIGNANT LYMPHOMA
12497	8dpc	16	M		6.06	HYPOTHYROIDISM
13610	8dpc	16	F	11.81		
13611	8dpc	16	F	11.81		
13612	8dpc	16	F		7.30	CONVULSIVE SEIZURES; HYPOTHYROIDISM
13613	8dpc	16	M	11.81		
13614	8dpc	16	M	11.81		
13615	8dpc	16	M	11.81		
13616	8dpc	16	F	11.81		
13617	8dpc	16	F		11.69	[HYPOTHYROIDISM; THYROID ATROPHY; GENERALIZED NEOPLASIA]
13618	8dpc	16	M		11.77	[HEMATOPOIETIC DISORDER]
13619	8dpc	16	M	11.81		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
13620	8dpc	16	M	11.81		
13729	8dpc	16	F	11.78		
13731	8dpc	16	F		8.82	CARCINOMA, MAMMARY GLAND, WITH METASTASES
13732	8dpc	16	M	11.78		
13733	8dpc	16	M		9.84	MYOCARDIAL AND PULMONARY INFARCTS; WIDESPREAD THROMBOSIS
13734	8dpc	16	M		10.20	HEMANGIOSARCOMA, SKIN, WITH METASTASES
13735	8dpc	16	M	11.78		
14083	8dpc	16	M	11.62		
14084	8dpc	16	M	11.62		
14334	8dpc	16	F		7.51	HYPOTHYROIDISM
14337	8dpc	16	F	11.52		
14338	8dpc	16	M	11.52		
14634	8dpc	16	M		11.33	[CHRONIC RENAL DISEASE]
15472	8dpc	16	F	11.20		
15473	8dpc	16	F		9.08	RENAL AMYLOIDOSIS; PULMONARY THROMBOSIS
15476	8dpc	16	M		1.00	INANITION, ACHALASIA
15793	8dpc	16	M	11.12		
16120	8dpc	16	M		0.06	COR PULMONALE
16128	8dpc	16	F	10.90		
16130	8dpc	16	F		6.90	HYPOTHYROIDISM
16132	8dpc	16	M		6.92	HYPOTHYROIDISM; THYROID ATROPHY
16134	8dpc	16	M	10.90		
16192	8dpc	16	F		10.00	[MAMMARY GLAND NEOPLASIA]
16193	8dpc	16	F		6.81	ENTERITIS
16194	8dpc	16	F	10.88		
16358	8dpc	16	F	10.84		
16360	8dpc	16	M	10.84		
16374	8dpc	16	F	10.84		
16375	8dpc	16	F	10.84		
16376	8dpc	16	F	10.84		
16377	8dpc	16	M		7.79	CONVULSIVE SEIZURES
16735	8dpc	16	F	10.72		
16736	8dpc	16	F		9.95	[HEMANGIOSARCOMA, METASTATIC]
16737	8dpc	16	F		5.48	HEPATIC LIPIDOSIS, CAUSE UNKNOWN
16864	8dpc	15	F	10.66		
16865	8dpc	15	F	10.66		
16867	8dpc	15	M	10.66		
16870	8dpc	16	F	10.66		
16871	8dpc	16	F	10.66		
16874	8dpc	16	M	10.66		
16887	8dpc	16	F	10.63		
16888	8dpc	16	F	10.63		
16891	8dpc	16	M	10.63		
17025	8dpc	16	F	10.56		
17026	8dpc	16	F		9.71	[MALIGNANT LYMPHOMA]
17027	8dpc	16	F	10.56		
17029	8dpc	16	M		6.24	MALIGNANT LYMPHOMA

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
07146	8dpc	79	F		11.38	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
07149	8dpc	79	F		3.41	CONVULSIVE SEIZURES
07150	8dpc	79	F		2.46	CONVULSIVE SEIZURES
07151	8dpc	79	M		11.86	CONGESTIVE HEART FAILURE
07583	8dpc	75	F		12.51	[MAST CELL SARCOMA]
07585	8dpc	75	M	13.36		
07586	8dpc	75	M		10.31	MALABSORPTION SYNDROME
09518	8dpc	79	F	12.85		
09519	8dpc	79	M		8.07	CONVULSIVE SEIZURES
09520	8dpc	79	M		4.33	GASTRIC IMPACTION, GRAVEL
09521	8dpc	79	M	12.85		
11704	8dpc	82	F	12.32		
11706	8dpc	82	F		11.50	[NEOPLASIA, HEART]
11707	8dpc	82	M		8.85	UNDETERMINED
11709	8dpc	82	M		11.69	[CONVULSIVE SEIZURES; CHRONIC RENAL DISEASE, UREMIA]
11797	8dpc	82	F		9.32	UNDETERMINED
11799	8dpc	82	M		12.01	[CONGESTIVE HEART FAILURE]
11929	8dpc	82	F	12.26		
11930	8dpc	82	M		6.28	HYPOTHYROIDISM
11931	8dpc	82	M	12.26		
12389	8dpc	82	F	12.07		
12391	8dpc	82	M	12.07		
12392	8dpc	82	M		0.05	UNDETERMINED
12393	8dpc	82	M		11.43	[SQUAMOUS CELL CARCINOMA, TONSIL; IV DISC SYNDROME]
12780	8dpc	77	M	11.96		
12781	8dpc	77	M	11.96		
12849	8dpc	81	M		5.97	MALABSORPTION SYNDROME
12850	8dpc	81	M		7.88	MALABSORPTION SYNDROME
12851	8dpc	81	M	11.95		
12852	8dpc	81	M	11.95		
12853	8dpc	81	M		11.00	[MALIGNANT LYMPHOMA]
12854	8dpc	81	M		8.90	HYPERADRENOCORTICISM
13165	8dpc	88	F	11.90		
13166	8dpc	88	F		10.94	[CNS DISORDER]
13167	8dpc	88	M	11.90		
13168	8dpc	88	M	11.90		
13169	8dpc	88	M	11.90		
13170	8dpc	88	M		10.93	[HYPOTHERMIA; HYPERADRENOCORTICISM]
13307	8dpc	87	M	11.86		
13308	8dpc	87	M	11.86		
13309	8dpc	87	M	11.86		
13995	8dpc	91	F		4.10	CONVULSIVE SEIZURES
13996	8dpc	91	F		10.17	ADENOCARCINOMA, LUNG
13997	8dpc	91	F	11.67		
13998	8dpc	91	F		9.45	CONVULSIVE SEIZURES
13999	8dpc	91	F		9.67	MYOCARDITIS, BACTERIAL
14000	8dpc	91	M		10.43	ENTERITIS
14535	8dpc	93	F		6.29	HYPOTHYROIDISM

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14536	8dpc	93	F	11.46		
14537	8dpc	93	F	11.46		
14539	8dpc	93	M		8.43	HYPOTHYROIDISM
14540	8dpc	93	M	11.46		
15061	8dpc	82	F	11.33		
15062	8dpc	82	M	11.33		
15063	8dpc	82	M	11.33		
15284	8dpc	80	F	11.27		
15285	8dpc	80	F		10.26	PNEUMONIA; HYPOTHERMIA
15287	8dpc	80	M	11.27		
15289	8dpc	80	M		10.30	[CONGESTTIVE HEART FAILURE]
15560	8dpc	80	F	11.19		
15561	8dpc	80	F	11.19		
15562	8dpc	80	F	11.19		
15566	8dpc	80	M	11.19		
15666	8dpc	80	F	11.17		
15668	8dpc	80	M	11.17		
15670	8dpc	80	M	11.17		
15686	8dpc	79	F	11.16		
15687	8dpc	79	F	11.16		
15691	8dpc	79	M	11.16		
15699	8dpc	80	F	11.16		
15700	8dpc	80	F		10.95	[HEPATIC NEOPLASIA]
15702	8dpc	80	M		5.94	CONVULSIVE SEIZURES
16264	8dpc	79	F	10.86		
16495	8dpc	79	F	10.82		
16496	8dpc	79	F	10.82		
16498	8dpc	79	M	10.82		
16586	8dpc	78	F		6.82	HYPOTHYROIDISM; THYROID ATROPHY
16587	8dpc	78	F		10.10	[CNS DISORDER]
16588	8dpc	78	F		8.78	MENINGOENCEPHALITIS
16589	8dpc	78	F	10.80		
16590	8dpc	78	M		7.01	IV DISC SYNDROME
16747	8dpc	78	F		6.63	DIABETES MELLITUS; PULMONARY THROMBOSIS
16748	8dpc	78	F		4.24	DYSTOCIA
16750	8dpc	78	M		9.14	GLOMERULOSCLEROSIS, UREMIA; AGENESIS, RENAL, UNILATERAL
16751	8dpc	78	M	10.72		
16847	8dpc	78	F	10.67		
16851	8dpc	78	M	10.67		
16953	8dpc	79	F	10.59		
16954	8dpc	79	M		7.34	CONVULSIVE SEIZURES
17327	8dpc	81	F	10.41		
17328	8dpc	81	F	10.41		
17331	8dpc	81	F		8.39	DIABETES MELLITUS

DOGS IRRADIATED AT 28 DAYS POSTCOITUS

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
06069	28dpc	16	F		6.13	MAST CELL SARCOMA, SKIN, WITH METASTASES
06070	28dpc	16	F	13.89		
06071	28dpc	16	M	13.89		
06072	28dpc	16	M		12.15	ADENOCARCINOMA, SITE OF PRIMARY UNKNOWN
06073	28dpc	16	M		12.37	MALIGNANT LYMPHOMA
06257	28dpc	16	F		11.30	POST-ANESTHETIC DEATH
06258	28dpc	16	F		12.41	GLOMERULOSCLEROSIS, UREMIA
06260	28dpc	16	M		7.25	UNDETERMINED
06262	28dpc	16	M		11.20	CARCINOMA, PERIANAL GLAND, WITH METASTASES; BRONCHIOLOALVEOLAR CARCINOMA, LUNG
06788	28dpc	16	F	13.63		
06789	28dpc	16	F		10.54	AORTIC AND PULMONARY THROMBOSIS
06790	28dpc	16	M		13.30	[RENAL DISEASE]
06791	28dpc	16	M	13.63		
07599	28dpc	16	F		6.03	CHRONIC RENAL DISEASE
07600	28dpc	16	F		6.83	CONVULSIVE SEIZURES
07601	28dpc	16	F		9.87	MALABSORPTION SYNDROME
07603	28dpc	16	M	13.36		
08293	28dpc	16	F		6.95	UNDETERMINED
08294	28dpc	16	F		5.82	CARDIAC FAILURE
08295	28dpc	16	M		9.23	GASTROENTERITIS
08296	28dpc	16	M		13.04	[MYOCARDIAL INFARCTS]
08297	28dpc	16	M		10.29	CONVULSIVE SEIZURES
08298	28dpc	16	M		7.21	HYPOTHYROIDISM
08513	28dpc	15	F		9.39	MALABSORPTION SYNDROME
08516	28dpc	15	M	13.15		
08518	28dpc	15	M	13.15		
09943	28dpc	16	F		12.72	[ADRENAL NEOPLASIA WITH METASTASES]
09944	28dpc	16	F	12.75		
09945	28dpc	16	F		12.47	[NEOPLASIA, URINARY BLADDER; PYURIA; SEPTICEMIA]
09946	28dpc	16	M		11.83	[MALIGNANT LYMPHOMA]
09948	28dpc	16	M		11.77	[CONVULSIVE SEIZURES]
09949	28dpc	16	M		12.70	[METASTATIC NEOPLASIA]
10148	28dpc	16	F		3.41	CONVULSIVE SEIZURES
10151	28dpc	16	M		10.21	MALIGNANT LYMPHOMA
10152	28dpc	16	M	12.68		
10352	28dpc	17	F	12.63		
10354	28dpc	17	M		7.94	PULMONARY THROMBOSIS
10355	28dpc	17	M		5.30	DIABETES MELLITUS
10356	28dpc	17	M		7.36	DIABETES MELLITUS; HYPOTHYROIDISM
12002	28dpc	16	F	12.21		
12004	28dpc	16	M	12.21		
12005	28dpc	16	M		11.13	UNDIFFERENTIATED SARCOMA, LIVER AND SPLEEN; GRANULOMATOUS PNEUMONIA
12007	28dpc	16	M		9.76	ADRENAL CORTICAL ATROPHY

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
12275	28dpc	16	F	12.11		
12276	28dpc	16	F		10.22	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
12277	28dpc	16	F		8.04	HYPOTHYROIDISM
12278	28dpc	16	F	12.11		
12279	28dpc	16	F		10.76	MALIGNANT LYMPHOMA; HYPOTHYROIDISM
12940	28dpc	16	F	11.93		
12941	28dpc	16	F	11.93		
12942	28dpc	16	F	11.93		
12944	28dpc	16	M	11.93		
12945	28dpc	16	M	11.93		
13464	28dpc	16	F		8.86	FOLLICULAR CELL ADENOCARCINOMA, THYROID
13465	28dpc	16	F		0.21	CANINE DISTEMPER
13466	28dpc	16	F		9.95	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
13467	28dpc	16	M		9.95	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
13554	28dpc	16	M	11.82		
14523	28dpc	16	F	11.47		
14529	28dpc	16	M		10.46	ATROPHIC THYROIDITIS; HYPOTHERMIA
14864	28dpc	16	F	11.37		
14865	28dpc	16	F		10.40	[METASTATIC NEOPLASIA]
14868	28dpc	16	M	11.37		
15083	28dpc	16	F	11.33		
15086	28dpc	16	M		10.34	[THYROID ATROPHY, HYPOTHYROIDISM]
15426	28dpc	16	F		9.23	TOXEMIA, CAUSE UNKNOWN
15427	28dpc	16	F		5.69	CONVULSIVE SEIZURES
15428	28dpc	16	F	11.22		
15430	28dpc	16	M		9.45	CONVULSIVE SEIZURES
15447	28dpc	16	F	11.21		
15449	28dpc	16	M		10.38	[MALIGNANT LYMPHOMA]
15450	28dpc	16	M		11.13	[HEMANGIOMA, SPLEEN; MICROANGIOPATHIC ANEMIA]
15480	28dpc	16	F	11.20		
15481	28dpc	16	F	11.20		
15482	28dpc	16	F	11.20		
15484	28dpc	16	M	11.20		
15587	28dpc	16	F		8.00	MALIGNANT LYMPHOMA
15588	28dpc	16	F		0.05	PULMONARY HEMORRHAGE AND EDEMA
15589	28dpc	16	M		3.40	CONVULSIVE SEIZURES
15592	28dpc	16	M		2.04	ASPHYXIATION
16051	28dpc	16	F		6.01	CONVULSIVE SEIZURES
16052	28dpc	16	F		4.39	DYSTOCIA
16054	28dpc	16	M	10.93		
16158	28dpc	16	F	10.88		
16162	28dpc	16	M		7.75	CONVULSIVES SEIZURES
16255	28dpc	16	M	10.86		
16350	28dpc	16	M		9.70	CONVULSIVE SEIZURES
16351	28dpc	16	M		5.55	CONVULSIVE SEIZURES
16705	28dpc	16	F	10.74		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
16708	28dpc	16	M		5.96	CONVULSIVE SEIZURES
16710	28dpc	16	M		6.25	CONVULSIVE SEIZURES
16827	28dpc	16	M	10.67		
16853	28dpc	16	F	10.67		
16855	28dpc	16	F		9.69	[METASTATIC NEOPLASIA]
16858	28dpc	16	M	10.67		
17124	28dpc	16	F		7.90	GLOMERULOSCLEROSIS, UREMIA
17127	28dpc	16	M	10.50		
05859	28dpc	80	M		10.98	CHRONIC RENAL DISEASE
06753	28dpc	80	F		12.78	[LIVER ABSCESSES]
06754	28dpc	80	F	13.64		
06755	28dpc	80	M	13.64		
06808	28dpc	80	F		13.21	[PULMONARY NEOPLASIA]
06809	28dpc	80	F		8.20	HEPATOCELLULAR ADENOMA; HEPATIC ATROPHY
06811	28dpc	80	M		13.53	[CONGESTIVE HEART FAILURE]
06812	28dpc	80	M	13.61		
06813	28dpc	80	M	13.61		
07846	28dpc	77	F		10.48	PYOMETRA WITH SEPTIC SHOCK
07848	28dpc	77	F		11.80	PYOMETRA, SEPTICEMIA
07849	28dpc	77	M	13.31		
08477	28dpc	79	F		7.15	PULMONARY THROMBOSIS
08479	28dpc	79	M	13.17		
08480	28dpc	79	M		12.17	[HYPOTHERMIA]
08481	28dpc	79	M		0.06	PULMONARY HEMORRHAGE AND EDEMA
09480	28dpc	80	F		10.32	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
09481	28dpc	80	M		11.90	[CNS DISORDER]
09483	28dpc	80	M		0.05	COR PULMONALE
10499	28dpc	79	F	12.58		
10501	28dpc	79	F	12.58		
10503	28dpc	79	M	12.58		
10647	28dpc	80	F		10.32	HEPATOCELLULAR CARCINOMA
10648	28dpc	80	M	12.53		
10649	28dpc	80	M	12.53		
10650	28dpc	80	M		12.35	[CHRONIC RENAL DISEASE]
10964	28dpc	79	F		5.23	CONVULSIVE SEIZURES
10967	28dpc	79	M		11.20	CONVULSIVE SEIZURES
11401	28dpc	82	F		5.96	GASTRIC IMPACTION, GRAVEL
11402	28dpc	82	F		11.96	[NEOPLASIA, URINARY BLADDER, URETHRA]
11403	28dpc	82	F	12.39		
11406	28dpc	82	M		0.31	COR PULMONALE
11407	28dpc	82	M		10.15	BILE DUCT CARCINOMA, LIVER, WITH METASTASES
12018	28dpc	81	F	12.21		
12020	28dpc	81	M	12.21		
12021	28dpc	81	M		8.34	CHRONIC RENAL DISEASE; CEREBRAL INFARCTS
12022	28dpc	81	M	12.21		
12436	28dpc	79	M	12.05		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14002	28dpc	94	F	11.67		
14381	28dpc	90	F	11.50		
14382	28dpc	90	M		8.02	HEMOLYTIC ANEMIA; HYPOTHYROIDISM
14383	28dpc	90	M	11.50		
14554	28dpc	92	F		9.89	MAST CELL SARCOMA, VISCERAL
14556	28dpc	92	M		11.25	[GRAVEL INGESTION]
14557	28dpc	92	M	11.46		
14783	28dpc	80	F	11.39		
14784	28dpc	80	F	11.39		
14785	28dpc	80	M	11.39		
14977	28dpc	80	F	11.34		
14978	28dpc	80	F		8.24	CHRONIC RENAL DISEASE
14979	28dpc	80	F		10.04	HEPATIC DEGENERATION, CAUSE UNKNOWN
14981	28dpc	80	M		11.05	[MYOCARDIAL INFARCTS; DISSEMINATED INTRAVASCULAR COAGULATION]
15171	28dpc	80	F		5.38	DIABETES MELLITUS
15172	28dpc	80	F		10.06	DIABETES MELLITUS
15174	28dpc	80	F	11.31		
15175	28dpc	80	M		3.99	HEMOLYTIC ANEMIA
15206	28dpc	79	F	11.29		
15209	28dpc	79	M	11.29		
15307	28dpc	81	F	11.27		
15308	28dpc	81	M	11.27		
15309	28dpc	81	M		10.36	[HYPOTHYROIDISM, THYROID ATROPHY]
15422	28dpc	80	F	11.23		
15423	28dpc	80	F	11.23		
15424	28dpc	80	M	11.23		
15467	28dpc	79	M		10.24	[HYPOTHERMIA]
15468	28dpc	79	M		8.26	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
15655	28dpc	80	F		8.27	MENINGIOMA, BRAIN
15656	28dpc	80	M	11.17		
15765	28dpc	81	F	11.12		
15963	28dpc	79	F		6.06	DIABETES MELLITUS
15965	28dpc	79	M	11.01		
16182	28dpc	79	M	10.88		
16183	28dpc	79	M	10.88		
16321	28dpc	79	F		10.31	[MAST CELL SARCOMA]
16322	28dpc	79	F		6.85	HYPOTHYROIDISM
16323	28dpc	79	M	10.85		
16353	28dpc	80	F	10.84		
16354	28dpc	80	F	10.84		
16355	28dpc	80	F	10.84		
16357	28dpc	80	M	10.84		
16693	28dpc	79	F	10.74		
16694	28dpc	79	F	10.74		
16696	28dpc	79	F	10.74		
16697	28dpc	79	M	10.74		

DOGS IRRADIATED AT 55 DAYS POSTCOITUS

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
05775	55dpc	15	F		13.93	[ANEMIA]
05777	55dpc	15	M	14.07		
05778	55dpc	15	M		13.36	[INTESTINAL DISEASE, NEOPLASIA]
05779	55dpc	15	M	14.07		
05780	55dpc	15	M		7.57	MALIGNANT LYMPHOMA
06395	55dpc	16	F		0.04	INANITION, CAUSE UNKNOWN
06397	55dpc	16	F		10.60	DIABETES MELLITUS
06398	55dpc	16	F		11.73	CONGESTIVE HEART FAILURE
06399	55dpc	16	M		10.25	HEMOLYTIC ANEMIA; HYPOTHYROIDISM
06401	55dpc	16	M		10.72	SEGMENTAL ENTERITIS; ANEMIA
07014	55dpc	16	F		11.11	ENTERITIS
07015	55dpc	16	F		10.23	CARCINOMA, ECTOPIC THYROID
07016	55dpc	16	M	13.54		
07018	55dpc	16	M	13.54		
07291	55dpc	16	F	13.45		
07292	55dpc	16	F		6.56	CONVULSIVE SEIZURES
07293	55dpc	16	M		8.99	MALIGNANT LYMPHOMA
07294	55dpc	16	M	13.45		
07295	55dpc	16	M		10.59	UNCLASSIFIED PRIMARY BRAIN TUMOR
07969	55dpc	16	F		9.12	ANESTHETIC DEATH
07970	55dpc	16	M		11.48	CONVULSIVE SEIZURES; HEMANGIOSARCOMA, JEJUNUM
07971	55dpc	16	M	13.27		
09909	55dpc	16	F		9.96	CONVULSIVE SEIZURES
09910	55dpc	16	F		12.13	[CHRONIC RENAL DISEASE]
09913	55dpc	16	M	12.76		
09914	55dpc	16	M	12.76	12.76	[UNDETERMINED]
10592	55dpc	16	F	12.55		
10593	55dpc	16	F	12.55		
10595	55dpc	16	M	12.55		
10596	55dpc	16	M	12.55		
10615	55dpc	16	F	12.54		
10616	55dpc	16	F		10.00	FOLLICULAR CELL ADENOCARCINOMA, THYROID; HYPOTHYROIDISM
10618	55dpc	16	M	12.54		
10619	55dpc	16	M		10.40	GLOMERULOSCLEROSIS, UREMIA; MYELOMALACIA
10620	55dpc	16	M		11.75	[MALIGNANT LYMPHOMA]
11212	55dpc	16	F		10.98	HEMANGIOSARCOMA, SPLEEN, WITH METASTASES
11213	55dpc	16	F	12.42		
11214	55dpc	16	F		7.73	CARCINOMA, MAMMARY GLAND, WITH METASTASES
11215	55dpc	16	F		10.73	MALIGNANT LYMPHOMA
11216	55dpc	16	M	12.42		
11218	55dpc	16	M	12.42		
11900	55dpc	16	M	12.27		
11902	55dpc	16	M	12.27		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
11904	55dpc	16	M		8.10	MALABSORPTION SYNDROME, GRANULOMATOUS ENTERITIS
11938	55dpc	15	F	12.25		
11939	55dpc	15	F		0.28	UNDETERMINED
11940	55dpc	15	F		2.83	DYSTOCIA
11941	55dpc	15	M		11.72	[HEMOPERITONEUM, SPLENIC MASS RUPTURE]
11942	55dpc	15	M	12.25		
12125	55dpc	16	F		8.96	EPENDYMOMA, BRAIN
12126	55dpc	16	F	12.16		
12128	55dpc	16	F		8.68	NECROTIZING SIALADENITIS WITH TOXEMIA
12130	55dpc	16	M	12.16		
12989	55dpc	16	F		11.46	[THYROID NEOPLASIA WITH METASTASES]
12990	55dpc	16	F	11.92		
13031	55dpc	16	F	11.92		
13033	55dpc	16	F	11.92		
13034	55dpc	16	M	11.92		
13035	55dpc	16	M	11.92		
14099	55dpc	15	F		8.20	GASTROENTERITIS
14100	55dpc	15	F		10.65	[HYPOTHYROIDISM, THYROID ATROPHY]
14103	55dpc	15	M		9.60	CONVULSIVE SEIZURES
14104	55dpc	15	M		7.76	CONVULSIVE SEIZURES
14484	55dpc	15	F	11.49		
14485	55dpc	15	M		8.53	CONVULSIVE SEIZURES
14486	55dpc	15	M	11.49		
14558	55dpc	16	F	11.46		
14559	55dpc	16	F		10.91	[TOXEMIA; PYOMETRA]
14560	55dpc	16	F		7.46	UNDETERMINED
14561	55dpc	16	M		2.97	CONVULSIVE SEIZURES
14719	55dpc	16	F	11.41		
14720	55dpc	16	F	11.41		
14722	55dpc	16	M		7.64	HEART FAILURE
14859	55dpc	16	F	11.38		
14860	55dpc	16	F	11.38		
14861	55dpc	16	F	11.38		
14862	55dpc	16	F		9.61	MALIGNANT LYMPHOMA
14958	55dpc	15	F		9.56	GLOMERULOSCLEROSIS, UREMIA; ENDOCARDITIS, MYOCARDIAL INFARCTION
14959	55dpc	15	F		8.37	GLOMERULOSCLEROSIS, RENAL TUBULAR DEGENERATION, UREMIA
14961	55dpc	15	M	11.34		
14991	55dpc	16	F	11.34		
14992	55dpc	16	F		1.71	METRITIS
14993	55dpc	16	F		10.32	HYPOTHYROIDISM
14994	55dpc	16	M	11.34		
15299	55dpc	15	F		9.38	GENERALIZED DERMATITIS, ALOPECIA; HYPOTHERMIA
15300	55dpc	15	F		7.20	HYPOTHYROIDISM
15302	55dpc	15	M		0.29	INANITION, ACHALASIA
15303	55dpc	15	M		10.76	[CONVULSIVE SEIZURES]

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
15304	55dpc	15	M		9.21	CHEMODECTOMA, HEART BASE, WITH METASTASES
15305	55dpc	15	M		9.54	CHRONIC PARVOVIRAL ENTERITIS, PERITONITIS
15365	55dpc	16	F		10.41	[METASTATIC NEOPLASIA]
15366	55dpc	16	F	11.25		
15367	55dpc	16	M		9.15	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM; CONVULSIVE SEIZURES
15369	55dpc	16	M	11.25		
05641	55dpc	78	F		1.89	HEMOLYTIC ANEMIA
05643	55dpc	78	F		13.36	[PULMONARY EDEMA]
05644	55dpc	78	M		13.73	[HYPERADRENOCORTICISM; PITUITARY TUMOR; PULMONARY AND AORTIC THROMBOSIS]
05645	55dpc	78	M	14.15		
05983	55dpc	78	F		9.98	DIABETES MELLITUS; SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
05984	55dpc	78	F		10.21	MALIGNANT LYMPHOMA
05985	55dpc	78	F		11.51	DIABETES MELLITUS
05986	55dpc	78	M		8.40	MALIGNANT LYMPHOMA
06722	55dpc	79	F		13.21	[CONGESTIVE HEART FAILURE]
06724	55dpc	79	M		7.44	HEMANGIOSARCOMA, SPLEEN, WITH METASTASES
06725	55dpc	79	M		13.57	[HEART FAILURE]
07161	55dpc	79	F	13.47		
07162	55dpc	79	M		12.51	[PARATHYROID NEOPLASIA]
07504	55dpc	75	F	13.39		
07506	55dpc	75	M		0.23	COR PULMONALE
07508	55dpc	75	M		8.39	UNDETERMINED
08144	55dpc	79	F		7.24	AORTIC STENOSIS, HEART
08146	55dpc	79	M		10.10	HYPERADRENOCORTICISM
08147	55dpc	79	M		0.15	INANITION, CAUSE UNKNOWN
08369	55dpc	78	F		2.03	DYSTOCIA
08370	55dpc	78	F	13.20		
08371	55dpc	78	F		12.24	[MAMMARY GLAND NEOPLASIA]
08372	55dpc	78	M		10.62	MYXOMA, COLON, WITH HEMORRHAGE
09444	55dpc	78	M	12.86		
09445	55dpc	78	M	12.86		
09446	55dpc	78	M	12.86		
09447	55dpc	78	M		7.15	MALABSORPTION SYNDROME
10041	55dpc	81	F		12.16	[DIABETES MELLITUS]
10042	55dpc	81	F	12.70		
10043	55dpc	81	M		10.40	MALIGNANT LYMPHOMA
10045	55dpc	81	M		7.60	ADENOCARCINOMA, PROSTATE
10221	55dpc	79	F		10.94	DISSEMINATED INTRAVASCULAR COAGULATION; SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
10223	55dpc	79	F	12.66		
10224	55dpc	79	M	12.66		
10225	55dpc	79	M	12.66		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
10226	55dpc	79	M		11.14	LEIOMYOSARCOMA, ILEOCECAL REGION; INTESTINAL PERFORATION, SEPTICEMIA
10372	55dpc	79	F		11.68	[MAMMARY GLAND NEOPLASIA]
10373	55dpc	79	F	12.62		
10375	55dpc	79	M		10.86	ADENOCARCINOMA, DUCTAL, PANCREAS, WITH METASTASES
11065	55dpc	79	F		10.62	TRANSITIONAL CELL CARCINOMA, URINARY BLADDER
11066	55dpc	79	F		1.78	MALIGNANT LYMPHOMA
11069	55dpc	79	M		11.94	[HYPOTHYROIDISM; THYROID ATROPHY; THYROID NEOPLASIA; HYPOGLYCEMIC CONVULSIVE SEIZURE]
11095	55dpc	81	F		9.56	VOLVULUS, SMALL INTESTINE
11096	55dpc	81	M	12.44		
11097	55dpc	81	M	12.44		
11867	55dpc	81	F	12.27		
11868	55dpc	81	F		10.60	MALIGNANT LYMPHOMA
11869	55dpc	81	F		12.20	[CHRONIC RENAL DISEASE]
11871	55dpc	81	F	12.27		
11992	55dpc	82	F		11.77	[PNEUMONIA]
11993	55dpc	82	F		10.33	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
11995	55dpc	82	M		10.39	TRANSITIONAL CELL CARCINOMA, URINARY BLADDER
12448	55dpc	79	F		4.50	DYSTOCIA
12449	55dpc	79	F		11.92	[HEMANGIOSARCOMA, METASTATIC]
12450	55dpc	79	M		3.59	CONVULSIVE SEIZURES
12451	55dpc	79	M	12.05		
12452	55dpc	79	M	12.05		
12453	55dpc	79	M	12.05		
13666	55dpc	90	F		5.15	CONVULSIVE SEIZURES
13668	55dpc	90	F		9.43	DIABETES MELLITUS
13670	55dpc	90	M		7.89	MYOCARDITIS; GENERALIZED ARTERITIS
13979	55dpc	89	F		6.19	HYPOTHYROIDISM
13980	55dpc	89	M	11.69		
13982	55dpc	89	M	11.69		
13983	55dpc	89	M	11.69		
14253	55dpc	90	F	11.54		
14254	55dpc	90	F		0.07	INANITION, CAUSE UNKNOWN
14257	55dpc	90	M		0.24	ASTROCYTOMA, CEREBRUM
14311	55dpc	88	F		8.80	PULMONARY EDEMA
14312	55dpc	88	F		8.41	PULMONARY THROMBOSIS
14313	55dpc	88	F	11.53		
14315	55dpc	88	M		0.70	CHRONIC RENAL DISEASE
14760	55dpc	78	F	11.39		
14761	55dpc	78	F		10.16	DIABETES MELLITUS
14762	55dpc	78	M		10.49	[IV DISC SYNDROME; THYROID ATROPHY, HYPOTHYROIDISM]
14763	55dpc	78	M		10.25	CONVULSIVE SEIZURES
14764	55dpc	78	M		7.69	IV DISC SYNDROME
14765	55dpc	78	M	11.39		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14897	55dpc	80	F	11.37		
14901	55dpc	80	M	11.37		
14902	55dpc	80	M	11.37		
15151	55dpc	78	F		9.98	COR PULMONALE
15152	55dpc	78	F	11.32		
15154	55dpc	78	F	11.32		
15155	55dpc	78	F	11.32		
15156	55dpc	78	F		8.09	HYPOTHYROIDISM
15244	55dpc	79	F	11.29		
15245	55dpc	79	M	11.29		
15246	55dpc	79	M	11.29		
15319	55dpc	78	F		11.12	[IV DISC SYNDROME]
15320	55dpc	78	M		9.21	MALIGNANT LYMPHOMA; SEPTICEMIA, PERITONITIS
15321	55dpc	78	M	11.26		
15322	55dpc	78	M		1.19	INANITION; AMAUROSIS
15323	55dpc	78	M		11.20	[HYPOTHYROIDISM; THYROID ATROPHY]

DOGS IRRADIATED AT 2 DAYS POSTPARTUM

06273	2dpp	18	F		13.44	[TOXEMIA; PYOMETRA]
06274	2dpp	18	F		7.28	DIABETIS MELLITUS
06275	2dpp	18	M	13.83		
06361	2dpp	18	F		13.14	[SUBDURAL HEMORRHAGE, SPINAL CORD]
06362	2dpp	18	F		11.94	GLOMERULOSCLEROSIS, UREMIA
06363	2dpp	18	F		5.47	UNDETERMINED
06365	2dpp	18	M		12.90	[HYPOTHERMIA; HYPOTHYROIDISM; THYROID ATROPHY]
06366	2dpp	18	M	13.80		
06935	2dpp	17	F	13.58		
06938	2dpp	17	M		9.98	ADENOCARCINOMA, KIDNEY, WITH METASTASES
06939	2dpp	17	M	13.58		
07255	2dpp	18	F		0.15	INANITION, CAUSE UNKNOWN
07256	2dpp	18	F		0.19	INANITION; COCCIDIOSIS
07258	2dpp	18	M		7.93	HEMANGIOSARCOMA, SPLEEN, WITH METASTASES
07364	2dpp	18	F		4.35	DYSTOCIA
07365	2dpp	18	F	13.43		
07366	2dpp	18	F		10.09	PNEUMONIA
07367	2dpp	18	M		13.27	[CHRONIC RENAL DISEASE]
07368	2dpp	18	M		6.93	HEMOLYTIC ANEMIA
07443	2dpp	18	F	13.40		
07444	2dpp	18	F	13.40		
07445	2dpp	18	M	13.40		
07446	2dpp	18	M		9.42	TOXEMIA, SEPTIC
07447	2dpp	18	M	13.40		
08940	2dpp	18	F		12.06	[HYPOTHERMIA]
08943	2dpp	18	M	13.03		
09359	2dpp	18	F	12.87		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
09360	2dpp	18	F		7.69	CONVULSIVE SEIZURES
09361	2dpp	18	F		7.26	CONVULSIVE SEIZURES
09363	2dpp	18	M	12.87		
09364	2dpp	18	M		9.07	CONVULSIVE SEIZURES
10185	2dpp	18	M		11.39	ENTERITIS
10186	2dpp	18	M		6.69	HYPOTHYROIDISM
10492	2dpp	18	F		12.40	[THYROID CARCINOMA WITH METASTASES]
10493	2dpp	18	F		9.37	HYPOTHYROIDISM
10494	2dpp	18	F		6.58	HYPOTHYROIDISM
10495	2dpp	18	M		8.80	ELECTROLYTE IMBALANCE; UNDETERMINED ORIGIN
10496	2dpp	18	M	12.58		
11335	2dpp	17	F	12.40		
11336	2dpp	17	F		11.80	[SPLENIC NEOPLASIA, METASTATIC]
11337	2dpp	17	F	12.40		
11338	2dpp	17	M	12.40		
11339	2dpp	17	M		1.92	FIBROSARCOMA, NASAL CAVITY
11340	2dpp	17	M		11.21	MALIGNANT MELANOMA
11738	2dpp	17	F	12.31		
11740	2dpp	17	F		6.70	DIABETES MELLITUS
11741	2dpp	17	M		11.41	[HYPOTHERMIA]
11742	2dpp	17	M		9.35	CHRONIC SUPPURATIVE ARTHRITIS
11915	2dpp	17	F	12.26		
11917	2dpp	17	F		11.98	[METASTATIC NEOPLASIA; MYOCARDIAL INFARCTS]
11918	2dpp	17	F		7.15	CHRONIC RENAL DISEASE
11959	2dpp	18	F		6.24	HYPOTHYROIDISM
11960	2dpp	18	F		10.36	FOLLICULAR CELL ADENOCARCINOMA, THYROID; HYPOTHYROIDISM
11961	2dpp	18	M		0.18	UROLITHIASIS
11964	2dpp	17	F		5.75	GASTRIC IMPACTION, GRAVEL
11965	2dpp	17	M	12.23		
11966	2dpp	17	M	12.23		
11967	2dpp	17	M		11.18	HEPATIC ABSCESS, PERITONITIS
11969	2dpp	17	M	12.23		
12114	2dpp	17	F	12.17		
12116	2dpp	17	F		0.06	UNDETERMINED
13473	2dpp	18	F		10.26	PARVOVIRAL ENTERITIS
13475	2dpp	18	F		2.32	ANESTHETIC DEATH
13477	2dpp	18	M		10.43	CONVULSIVE SEIZURES
13718	2dpp	18	F		10.47	VASCULITIS, WITH ADRENAL GLAND INFARCTION
13719	2dpp	18	M		8.47	CHRONIC RENAL DISEASE
13720	2dpp	18	M	11.78		
13895	2dpp	18	F	11.74		
13897	2dpp	18	M	11.74		
13899	2dpp	18	M	11.74		
13900	2dpp	18	M	11.74		
14036	2dpp	18	F	11.64		
14037	2dpp	18	M	11.64		
14166	2dpp	18	F		9.93	HEMANGIOSARCOMA, HEART

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14168	2dpp	18	M	11.58		
14169	2dpp	18	M		11.47	[HYPOTHYROIDISM; THYROID NEOPLASIA; MALABSORPTION SYNDROME]
14170	2dpp	18	M	11.58		
14397	2dpp	18	F		8.37	TORSION, SMALL INTESTINE
14398	2dpp	18	F		10.19	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
14401	2dpp	18	M		10.44	CONGESTIVE HEART FAILURE; CONVULSIVE SEIZURES
14402	2dpp	18	M		0.06	COR PULMONALE
14488	2dpp	18	F	11.48		
14490	2dpp	18	M	11.48		
14491	2dpp	18	M		5.50	HYPOTHYROIDISM
14492	2dpp	18	M	11.48		
15353	2dpp	18	F	11.26		
15354	2dpp	18	F		0.45	COR PULMONALE
15355	2dpp	18	M		11.10	[UNDETERMINED]
15357	2dpp	18	M	11.26		
15434	2dpp	18	F		9.53	HEMANGIOSARCOMA, POSTERIOR ABDOMEN, WITH METASTASES
15435	2dpp	18	F	11.22		
15438	2dpp	18	M		9.06	RENAL SECONDARY HYPERPARATHYROIDISM; GLOMERULOSCLEROSIS, UREMIA
17622	2dpp	18	F		3.07	PULMONIC STENOSIS, HEART
17623	2dpp	18	F		2.82	DEHYDRATION
17626	2dpp	18	M	10.24		
05677	2dpp	86	M		13.13	ADENOCARCINOMA, ACINAR, PANCREAS, WITH METASTASES
05678	2dpp	86	M	14.14		
05680	2dpp	86	M	14.14		
06562	2dpp	89	F		8.74	CARCINOSARCOMA, MAMMARY GLAND, WITH METASTATIC CHONDROSARCOMA
06563	2dpp	89	M		12.99	[MALIGNANT LYMPHOMA, INTESTINE]
06564	2dpp	89	M		8.76	INCARCERATED HERNIA, ILEUM, WITH SHOCK
06565	2dpp	89	M		12.80	[HYPOTHERMIA]
06566	2dpp	89	M		10.81	HYPOTHYROIDISM; THYROID ATROPHY
07742	2dpp	88	F		12.10	DIABETES MELLITUS
07743	2dpp	88	F		12.11	COLONIC INFARCTION; PHEOCHROMOCYTOMA, ADRENAL GLAND
07744	2dpp	88	M		3.34	CONVULSIVE SEIZURES
07746	2dpp	88	M		9.94	GRANULOCYTIC LEUKEMIA
07747	2dpp	88	M	13.33		
09222	2dpp	88	F	12.91		
09223	2dpp	88	F		12.09	[METASTATIC NEOPLASIA]
09224	2dpp	88	F		9.74	PANCREATITIS; HEPATITIS; ENTERITIS
09922	2dpp	88	F	12.76		
09924	2dpp	88	F		8.52	MAST CELL SARCOMA WITH METASTASES
09925	2dpp	88	F		7.79	DIABETES MELLITUS; HYPOTHYROIDISM
09927	2dpp	88	M		12.62	[LIPOSARCOMA, METASTATIC]

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
10062	2dpp	88	F		4.36	DYSTOCIA
10063	2dpp	88	F	12.69		
10064	2dpp	88	M		10.77	TRANSITIONAL CELL CARCINOMA, PROSTATIC URETHRA
10065	2dpp	88	M	12.69		
10067	2dpp	88	M		2.59	GASTROENTERITIS
10310	2dpp	88	M	12.64		
10877	2dpp	87	M		5.49	UNDETERMINED
10878	2dpp	87	M		11.50	[UNDETERMINED]
10879	2dpp	87	M	12.48		
10880	2dpp	87	M		6.60	MALABSORPTION SYNDROME
10944	2dpp	87	F		12.15	[DIABETES MELLITUS]
10945	2dpp	87	F		11.11	PYOMETRA, TOXEMIA; ACUTE RENAL FAILURE, UREMIA
10946	2dpp	87	F		11.76	[ISLET CELL CARCINOMA, PANCREAS]
10948	2dpp	87	M		11.21	RENAL AMYLOIDOSIS, UREMIA
10949	2dpp	87	M	12.46		
12078	2dpp	87	F	12.19		
12080	2dpp	87	F	12.19		
12081	2dpp	87	F	12.19		
12083	2dpp	87	M	12.19		
12822	2dpp	90	F	11.95		
12824	2dpp	90	M	11.95		
13456	2dpp	90	F		8.70	HYPERADRENOCORTICISM
13458	2dpp	90	M		9.61	MYELOPHTHISIC ANEMIA; MYELOPROLIFERATIVE DISORDER
13503	2dpp	89	F	11.83		
13504	2dpp	89	F		0.30	SQUAMOUS CELL CARCINOMA, ORAL CAVITY
13505	2dpp	89	F	11.83		
13506	2dpp	89	M	11.83		
13507	2dpp	89	M	11.83		
13987	2dpp	90	F	11.67		
13988	2dpp	90	F		6.66	INCARCERATED INGUINAL HERNIA AND PERITONITIS
13989	2dpp	90	M	11.67		
14025	2dpp	89	F	11.65		
14028	2dpp	89	M	11.65		
14108	2dpp	89	M	11.61		
14138	2dpp	89	F	11.59		
14142	2dpp	89	F	11.59		
14143	2dpp	89	F		9.62	WIDESPREAD THROMBOSIS; CARCINOMA, NASAL CAVITY, WITH METASTASES
14144	2dpp	89	M	11.59		
14158	2dpp	90	F		5.90	CARCINOMA, OVARY, WITH METASTASES
14160	2dpp	90	M	11.59		
14161	2dpp	90	M		7.36	DIABETES MELLITUS; HYPOTHYROIDISM
14320	2dpp	90	F		6.79	FIBROUS ASTROCYTOMA, CEREBELLUM
14322	2dpp	90	F	11.53		
14323	2dpp	90	F	11.53		
14324	2dpp	90	M		11.21	[CONGESTIVE HEART FAILURE]

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14325	2dpp	90	M		5.90	CONVULSIVE SEIZURES
14592	2dpp	88	F		10.45	[MAMMARY GLAND NEOPLASIA]
14593	2dpp	88	F		10.92	[HYPERADRENOCORTICISM; PITUITARY TUMOR; PULMONARY THROMBOSIS]
14594	2dpp	88	F	11.44		
14595	2dpp	88	M		5.58	CONVULSIVE SEIZURES
14597	2dpp	88	M		7.15	CHRONIC RENAL DISEASE; CONVULSIVE SEIZURES
14963	2dpp	88	F		9.83	PERFORATED GASTRIC ULCER, PERITONITIS, SEPTICEMIA; ACUTE NEPHROSIS
14966	2dpp	88	M	11.34		
14967	2dpp	88	M	11.34		
15194	2dpp	88	F		10.72	[CHRONIC RENAL DISEASE]
15195	2dpp	88	F		6.27	ANESTHETIC DEATH AND DYSTOCIA
15197	2dpp	88	M		0.27	COR PULMONALE
15461	2dpp	88	F		0.23	AMAUROSIS; INANITION
15464	2dpp	88	M		11.11	[HYPOTHYROIDISM; THYROID ATROPHY]
15572	2dpp	88	F	11.19		
15574	2dpp	88	M	11.19		
15576	2dpp	88	M	11.19		
15600	2dpp	88	M		6.18	CONVULSIVE SEIZURES
15601	2dpp	88	M		10.12	CHRONIC PERICARDITIS, CARDIAC TAMPONADE
15603	2dpp	88	M		9.10	MENINGOENCEPHALITIS; MYOCARDITIS
15605	2dpp	88	F		7.92	PANCREATITIS
15606	2dpp	88	F		10.72	[CONGESTIVE HEART FAILURE; METASTATIC NEOPLASIA]
15608	2dpp	88	M	11.18		
DOGS IRRADIATED AT 70 DAYS POSTPARTUM						
05647	70dpp	82	F		12.23	HYDROCEPHALUS
05650	70dpp	82	M	14.15		
05651	70dpp	82	M	14.15		
05688	70dpp	82	F		10.67	COLONIC OBSTRUCTION AND DILATATION
05690	70dpp	82	M		13.07	MALIGNANT LYMPHOMA
06531	70dpp	83	F		11.09	MENINGITIS
06532	70dpp	83	F		6.16	INTESTINAL PERFORATION
06534	70dpp	83	M		10.88	ADENOCARCINOMA, NASAL CAVITY, WITH METASTASES
07112	70dpp	82	F	13.49		
07114	70dpp	82	M		12.73	[RENAL NEOPLASIA]
07810	70dpp	81	F		0.19	INANITION, CAUSE UNKNOWN
07811	70dpp	81	F		10.52	MASTITIS
07812	70dpp	81	F	13.32		
07813	70dpp	81	M		0.26	CANINE DISTEMPER
07814	70dpp	81	M		4.18	CONVULSIVE SEIZURES
07816	70dpp	81	M		7.63	CONVULSIVE SEIZURES
08552	70dpp	83	F		11.21	CORTICAL CARCINOMA, ADRENAL GLAND

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
08554	70dpp	83	M		11.38	CORTICAL CARCINOMA, ADRENAL GLAND; HYPOADRENOCORTICISM
08555	70dpp	83	M	13.13		
08556	70dpp	83	M	13.13		
08558	70dpp	83	M	13.13		
09008	70dpp	83	F	12.97		
09009	70dpp	83	F	12.97		
09010	70dpp	83	F	12.97		
09333	70dpp	83	F		10.69	HEMANGIOSARCOMA, ABDOMINAL WALL, WITH METASTASES
09334	70dpp	83	F		11.56	CARCINOMA, ECTOPIC THYROID, WITH METASTASES
09335	70dpp	83	F		9.41	UNDIFFERENTIATED ADENOCARCINOMA, SITE OF PRIMARY UNKNOWN
09337	70dpp	83	F		9.72	HYPERADRENOCORTICISM
09338	70dpp	83	F		10.47	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
09339	70dpp	83	M		11.63	RENAL AMYLOIDOSIS
10348	70dpp	81	M		8.68	CHRONIC NEPHRITIS, HYDRONEPHROSIS
10349	70dpp	81	M		7.39	MALABSORPTION SYNDROME
10350	70dpp	81	M	12.63		
10351	70dpp	81	M	12.63		
10832	70dpp	82	F		8.37	CHRONIC HEPATITIS WITH ATROPHY
10833	70dpp	82	F		11.83	[MALIGNANT LYMPHOMA; ADRENAL CORTICAL CARCINOMA]
10834	70dpp	82	M		11.95	[DIABETES MELLITUS]
10835	70dpp	82	M		8.63	FOLLICULAR CELL ADENOCARCINOMA, THYROID
11906	70dpp	82	F	12.27		
11907	70dpp	82	F	12.27		
11908	70dpp	82	M		10.96	MALABSORPTION SYNDROME, CHRONIC ENTERITIS
12051	70dpp	84	F	12.20		
12052	70dpp	84	F		11.41	[MALIGNANT LYMPHOMA]
12055	70dpp	84	M	12.20		
12056	70dpp	84	M	12.20		
12174	70dpp		F		0.14	INANITION, CAUSE UNKNOWN
12176	70dpp		M		0.15	UNDETERMINED
12177	70dpp	84	M		10.95	CARCINOMA, THYROID
12178	70dpp	84	M	12.14		
13192	70dpp	84	F		9.97	TORSION, JEJUNUM
13193	70dpp	84	M		0.33	COR PULMONALE
13224	70dpp	84	F		1.43	INTESTINAL PERFORATION
13225	70dpp	84	F	11.89		
13226	70dpp	84	F	11.89		
13227	70dpp	84	F		7.88	HYPOTHYROIDISM
13228	70dpp	84	M		11.44	[METASTATIC NEOPLASIA]
13229	70dpp	84	M	11.89		
13357	70dpp	84	F	11.84		
13358	70dpp	84	F		11.05	[TUMOR, BASE OF HEART]

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
13359	70dpp	84	M		7.70	CONVULSIVE SEIZURES; RUPTURED SPLENIC HEMANGIOMA
13361	70dpp	84	M	11.84		
13362	70dpp	84	M	11.84		
13363	70dpp	84	M		2.32	ANESTHETIC DEATH
13515	70dpp	84	F	11.83		
13516	70dpp	84	M	11.83		
14004	70dpp	82	F	11.67		
14005	70dpp	82	F	11.67		
14006	70dpp	82	F		0.54	LEAD POISONING
14008	70dpp	82	M	11.67		
14385	70dpp	82	F	11.50		
14386	70dpp	82	F		8.93	ENCEPHALOMALACIA
14387	70dpp	82	M	11.50		
14388	70dpp	82	M		7.44	HYPOTHYROIDISM
14658	70dpp	82	F		6.85	HYPOTHYROIDISM; NEPHROSIS
14660	70dpp	82	F		10.76	[DIABETES MELLITUS; LIVER ABSCESSES]
14661	70dpp	82	M	11.41		
14753	70dpp	82	F		9.97	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
14754	70dpp	82	M	11.40		
14755	70dpp	82	M		7.48	TORSION, COLON
14758	70dpp	82	M		5.01	CONVULSIVE SEIZURES
15005	70dpp	82	F		11.04	[HEPATIC FAILURE, POSTSURGICAL]
15007	70dpp	82	F	11.33		
15008	70dpp	82	F		4.92	PULMONARY THROMBOSIS
15009	70dpp	82	M		11.24	[CHRONIC RENAL DISEASE; TONSILLAR CARCINOMA]
15222	70dpp	82	M		9.76	MALIGNANT LYMPHOMA
15223	70dpp	82	M		10.39	[THYROID ATROPHY, HYPOTHYROIDISM]
15253	70dpp	82	F		7.04	CARCINOMA, THYROID
15254	70dpp	82	F	11.29		
15255	70dpp	82	M		11.13	[HYPOTHYROIDISM;THYROID ATROPHY]

DOGS IRRADIATED AT 365 DAYS POSTPARTUM

04472	365dpp	80	F		2.24	CONVULSIVE SEIZURES
04473	365dpp	80	F		11.78	SARCOMA, UNKNOWN PRIMARY SITE
04474	365dpp	82	M		14.07	[SQUAMOUS CELL CARCINOMA, SKIN, METASTATIC; AORTIC AND CARDIAC THROMBOSIS]
04477	365dpp	80	M		5.67	CONVULSIVE SEIZURES
04558	365dpp	81	F	14.97		
04559	365dpp	80	M		10.66	HYPOTHYROIDISM; CHRONIC RENAL DISEASE
04560	365dpp	80	M		13.21	IV DISC SYNDROME
04561	365dpp		M		0.06	PULMONARY HEMORRHAGE AND EDEMA
04601	365dpp	79	M		14.83	[SPLENIC NEOPLASIA, METASTATIC; HEMOPERITONEUM]

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
04603	365dpp	79	M		9.81	HYPOTHYROIDISM
04612	365dpp		F		0.11	INANITION; COCCIDIOSIS
04613	365dpp	80	F		11.00	HEMANGIOSARCOMA, LIVER
04614	365dpp	79	F		6.99	CHRONIC RENAL DISEASE
04617	365dpp	79	M		12.76	PNEUMONIA, BACTERIAL
04665	365dpp	81	F		14.11	[NEOPLASIA, ABDOMINAL]
04666	365dpp	78	M	14.86		
04668	365dpp	79	M		12.30	RUPTURED HYPERPLASTIC NODULE, SPLEEN
04673	365dpp	79	F		9.87	HYPOTHYROIDISM; INTERSTITIAL PNEUMONIA
04674	365dpp	79	M		12.66	ACUTE PYELONEPHRITIS; ATROPHIC; THYROIDITIS; HYPOTHYROIDISM; AORTIC THROMBOSIS
04675	365dpp	79	M	14.83		
04677	365dpp	79	M		12.95	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
04678	365dpp	79	M	14.83		
04738	365dpp	81	F		10.67	PNEUMONIA; CHRONIC RENAL DISEASE
04740	365dpp	79	M		10.51	IV DISC SYNDROME
04741	365dpp	78	M		11.90	UNDETERMINED
04742	365dpp	78	M	14.65		
04743	365dpp	78	M	14.65		
04744	365dpp	79	M		13.63	BRONCHIAL ADENOCARCINOMA, LUNG; WIDESPREAD INFARCTIONS
04770	365dpp	81	F		12.15	INTUSSUSCEPTION, SMALL INTESTINE
04771	365dpp	79	F		8.45	CARCINOMA, MAMMARY GLAND, WITH METASTASES
04773	365dpp	78	M	14.63		
04774	365dpp	79	M		13.73	[RENAL INFARCTS]
04775	365dpp	78	M		9.03	THYROID CARCINOMA
04776	365dpp	79	M		13.73	[UNDETERMINED]
04885	365dpp	81	F		14.07	[CNS DISORDER]
04886	365dpp	81	F		11.11	UNDETERMINED
04887	365dpp	80	M	14.51		
04889	365dpp	79	M	14.51		
04890	365dpp	81	F		12.78	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
04891	365dpp	79	F		13.03	PNEUMONIA
04918	365dpp	81	F		13.50	[NEOPLASIA, GENERALIZED]
04919	365dpp	81	F		4.32	HEMOLYTIC ANEMIA
04920	365dpp	81	M		7.09	GASTRIC IMPACTION, GRAVEL
04921	365dpp	80	M		13.06	MALIGNANT LYMPHOMA
04974	365dpp	79	F		8.16	CHRONIC RENAL DISEASE
04976	365dpp		F		0.61	COR PULMONALE
04978	365dpp	81	F		6.15	ASPHYXIATION
04979	365dpp	79	M		9.69	THROMBOSIS, TERMINAL AORTA AND POSTERIOR VENA CAVA; INFARCTION, RIGHT VENTRICLE
04980	365dpp	80	M		6.24	HYPOTHYROIDISM; DIABETES MELLITUS
05003	365dpp	81	F		4.71	ACHALASIA; PNEUMONIA

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
05006	365dpp	80	M		4.96	MALIGNANT LYMPHOMA
05007	365dpp	78	M		9.80	MALIGNANT LYMPHOMA
05065	365dpp	80	F		10.27	HYPOTHYROIDISM; DIABETES MELLITUS
05066	365dpp	82	M		13.88	[MAST CELL SARCOMA]
05067	365dpp	82	M		9.27	HYPOTHYROIDISM
05068	365dpp	80	M		9.41	ADENOCARCINOMA, PROSTATE, WITH METASTASES
05069	365dpp	82	M	14.38		
05070	365dpp	82	M		9.99	CHRONIC RENAL DISEASE
05374	365dpp	81	F		13.39	[IV DISC SYNDROME]
05375	365dpp	85	F		13.01	ASPIRATION PNEUMONIA
05377	365dpp	84	M	14.27		
06378	365dpp	84	F		11.76	RENAL AMYLOIDOSIS; MYOCARDITIS
06379	365dpp	82	M		10.67	PULMONARY THROMBOSIS
06381	365dpp	82	M	13.80		
06382	365dpp	81	M	13.80		
06474	365dpp	84	F		12.51	SQUAMOUS CELL CARCINOMA, SKIN
06475	365dpp	80	M		13.55	[RENAL DISEASE]
06476	365dpp	80	M	13.78		
06477	365dpp	82	M		10.80	ENTERITIS
06757	365dpp	79	F		6.64	HYPOTHYROIDISM
06758	365dpp	82	F		10.87	MALIGNANT LYMPHOMA
06759	365dpp	79	F		10.97	MAST CELL SARCOMA, WITH METASTASES
06760	365dpp	83	F		7.47	HEMOLYTIC ANEMIA
06761	365dpp	78	M		8.71	HYPOTHYROIDISM
06763	365dpp	79	M	13.64		
06824	365dpp	84	F		12.95	[HYDROTHORAX]
06825	365dpp	81	F		6.64	PYOMETRA
06826	365dpp	82	F		9.63	HYPOTHERMIA; PNEUMONIA
06827	365dpp	83	M		12.63	[UNDETERMINED]
06828	365dpp	82	M		13.26	[METASTATIC NEOPLASIA; ENDOCARDITIS; MYOCARDIAL INFARCTS]
06829	365dpp	83	M		11.73	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM; LUNG ABSCESS, PLEURITIS
07047	365dpp	82	F	13.51		
07049	365dpp	82	M	13.51		
07235	365dpp	82	M	13.46		
07236	365dpp		M		0.49	CONVULSIVE SEIZURES
07865	365dpp	82	F		12.15	ADENOCARCINOMA, BILE DUCT, LIVER, WITH METASTASES
07867	365dpp	80	M		4.82	HYPERTHERMIA
07869	365dpp	80	M		11.94	ADENOCARCINOMA, RECTUM; CHRONIC RENAL DISEASE
08299	365dpp		F		1.00	INANITION; AMAUROSIS
08300	365dpp	82	F	13.21		
08301	365dpp	80	M		11.24	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
08302	365dpp		M		0.23	INANITION; AMAUROSIS
08304	365dpp		M		0.14	INANITION, CAUSE UNKNOWN
08597	365dpp	80	F		6.51	CONVULSIVE SEIZURES

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
08598	365dpp	80	F		5.46	UNDETERMINED
08600	365dpp	79	M		7.00	UNDETERMINED
08601	365dpp	80	M		8.97	CONVULSIVE SEIZURES
09465	365dpp	87	F		7.87	HYPOTHYROIDISM; PULMONARY THROMBOSIS
09466	365dpp	87	F		6.23	MALIGNANT LYMPHOMA
09467	365dpp	87	M		7.79	PULMONARY THROMBOSIS; HYPOTHYROIDISM
09469	365dpp	87	M		11.95	[THYROID NEOPLASIA; HYPOTHYROIDISM]
09470	365dpp	87	M		8.79	HYPOTHYROIDISM
10138	365dpp	88	M		2.77	GASTROENTERITIS
10141	365dpp	90	M		5.93	CONVULSIVE SEIZURES
10153	365dpp	90	F	12.68		
10155	365dpp	89	M		11.71	[CONGESTIVE HEART FAILURE]
10156	365dpp	87	M		9.58	THROMBOSIS AND INFARCTION, WIDESPREAD; SPLENIC RUPTURE; PYELONEPHRITIS
10316	365dpp	89	F		9.87	ADENOCARCINOMA, MAMMARY GLAND, WITH METASTASES
10317	365dpp	90	F		12.57	[MAST CELL SARCOMA; HYPOTHYROIDISM; THYROID ATROPHY]
10318	365dpp	89	F	12.64		
10459	365dpp	88	F		12.01	[UNDETERMINED]
10460	365dpp	86	F	12.59		
10461	365dpp	90	F		3.46	CONVULSIVE SEIZURES
10462	365dpp	86	M		7.09	UNDETERMINED
10464	365dpp	87	F		10.53	UNDIFFERENTIATED SARCOMA, HEART, WITH METASTASES
10465	365dpp		F		0.15	INANITION, CAUSE UNKNOWN
10468	365dpp	90	M	12.59		
10541	365dpp	85	F		8.70	MAST CELL SARCOMA, SKIN
10542	365dpp	89	F	12.56		
10547	365dpp	87	M	12.56		
10581	365dpp	88	F		8.52	CONVULSIVE SEIZURES
10584	365dpp	87	M	12.55		
10682	365dpp		F		0.37	COR PULMONALE
10684	365dpp	85	M		6.69	UNDETERMINED
10920	365dpp	81	F	12.46		
10921	365dpp	82	F		7.07	PYOMETRA
10923	365dpp	80	M		10.66	CONGESTIVE HEART FAILURE
10958	365dpp	78	F		7.49	TRANSITIONAL CELL CARCINOMA, URINARY BLADDER
10959	365dpp	77	M	12.45		
10961	365dpp	79	M		10.98	CONGESTIVE HEART FAILURE
11560	365dpp	79	F		12.06	[HYPERADRENOCORTICISM; PITUITARY TUMOR; PULMONARY THROMBOSIS]
11562	365dpp	79	M	12.35		
11571	365dpp	81	F		9.63	CONVULSIVE SEIZURES
11572	365dpp	83	F		9.84	HEMANGIOSARCOMA, LIVER
11575	365dpp	81	M		8.32	CHRONIC RENAL DISEASE
11975	365dpp	80	F	12.22		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
11979	365dpp	80	M	12.22		
12131	365dpp	81	F		9.07	MALIGNANT LYMPHOMA
12132	365dpp	78	M	12.16		
12133	365dpp	78	M	12.16		
12155	365dpp	81	F		4.75	UNDETERMINED
12158	365dpp	79	M	12.15		
12159	365dpp	81	F		6.68	PYOMETRA
12160	365dpp	81	F		8.66	INTUSSUSCEPTION, JEJUNUM
12162	365dpp	82	F	12.15		
12163	365dpp	78	M	12.15		
12689	365dpp	78	F		9.91	GLOMERULOSCLEROSIS, UREMIA; HYPOTHYROIDISM
13010	365dpp	81	F		8.71	ENTERITIS, POSSIBLY VIRAL
13011	365dpp	82	F	11.92		
13013	365dpp	81	M		7.12	PYELITIS; PROSTATITIS
13150	365dpp	81	F		7.98	HYPOTHYROIDISM
13154	365dpp	79	F	11.90		
13157	365dpp	80	M	11.90		
13399	365dpp	78	F		5.92	PULMONARY HEMORRHAGE AND EDEMA
13400	365dpp	80	F		10.65	CARCINOMA, PITUITARY; DIABETES MELLITUS
13401	365dpp	81	F	11.84		
13404	365dpp	80	M		1.03	ANESTHETIC DEATH
13932	365dpp	78	F		10.41	SOLID CARCINOMA, MAMMARY GLAND, WITH METASTASES
13935	365dpp	77	M	11.71		
14032	365dpp	80	F	11.64		
14033	365dpp	79	M	11.64		
14047	365dpp	80	F	11.63		
14048	365dpp	79	F	11.63		
14049	365dpp	80	F		9.38	ADENOMA, UTERUS; PERITONITIS; MALIGNANT LYMPHOMA WITH PLASMA CELL DIFFERENTIATION
14050	365dpp	79	F		4.66	HYPOTHYROIDISM
14206	365dpp	80	F		9.23	PERITONITIS, SEPTIC
14207	365dpp	78	F	11.56		
14233	365dpp	80	F	11.55		
14237	365dpp	79	M	11.55		
14266	365dpp	81	F		10.23	DIABETES MELLITUS
14268	365dpp	78	M	11.54		
14519	365dpp	81	F	11.47		
14522	365dpp	78	M	11.47		
14547	365dpp	81	F		10.56	[HYPOTHYROIDISM, THYROID ATROPHY]
14551	365dpp	79	M		9.58	ATROPHIC THYROIDITIS WITH HYPOTHYROIDISM
14599	365dpp	81	F	11.44		
14600	365dpp	81	F		9.88	HYPERADRENOCORTICISM; ADENOMA, PITUITARY
14601	365dpp	82	F	11.44		
14796	365dpp	78	F	11.39		

DOG NO.	AGE AT IRRAD	DOSE (RADS)	SEX	CURRENT AGE	DEATH AGE	DIAGNOSES (DISEASES)
14798	365dpp	78	M		9.27	ACUTE GASTRIC DILATATION WITH GRAVEL IMPACTION
14947	365dpp	77	M	11.35		
15050	365dpp	79	F	11.33		
15052	365dpp	79	F	11.33		
15053	365dpp	79	F	11.33		
15055	365dpp	78	M	11.33		
15259	365dpp	83	F		8.41	HEMANGIOSARCOMA, PELVIC CANAL WITH METASTASES
15262	365dpp	82	M	11.28		

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FDA 82-8198 The Role of the U.S. Public Health Service in Radiological Health: 1946-1969 (PB 83-175695, $25.00).

FDA 83-8023 Radiological Health Training Resources Catalog, 1983.

FDA 83-8042 CSU-FDA Collaborative Radiological Health Laboratory Annual Report-1981 (PB 84-108372, $13.00).

FDA 83-8152 Annual Report of the Division of Biological Effects, Bureau of Radiological Health (Fiscal Year 1981) (PB 83-165779, $11.50).

FDA 83-8154 Quality Control Procedures for Field Uniformity Correction Devices in Nuclear Medicine (GPO 017-015-00209-8, $2.75) (PB 83-225764, mf only).

FDA 83-8199 The Performance of a New 915 MHz Direct Contact Applicator with Reduced Leakage - A Detailed Analysis (PB 83-226621, $8.50).

FDA 83-8202 A Microprocessor Controlled Instrument for Measurement and Display of X-Ray Waveforms (PB 83-215509, $10.00).

FDA 83-8203 Suggested State Regulations for Control of Radiation, Volume I - Ionizing Radiation (GPO 017-015-00208-0, $11.00) (PB 83-252569, $34.00).

FDA 83-8204 The Selection of Patients for X-Ray Examinations: Chest X-Ray Screening Examinations (GPO 017-015-00210-1, $4.50) (PB 84-179647, $10.00).

FDA 83-8208 Utilization of Diagnostic X-Ray Examinations (GPO 017-015-00212-8, $4.00) (PB 84-118793, $10.00).

FDA 83-8209 Joint NCDRH and State Quality Assurance Surveys in Nuclear Medicine: Phase 1 - Scintillation Cameras and Dose Calibrators (GPO 017-015-00214-4, $3.75) (PB 84-118405, $10.00).

FDA 83-8210 Source Book of Educational Materials for Diagnostic Medical Ultrasound (GPO 017-015-00211-0, $4.00) (PB 84-118785, $11.50).

FDA 83-8211 Preparedness and Response in Radiation Accidents (GPO 017-015-00213-6, $6.00) (PB 84-104736, $23.50).

FDA 83-8213 Mammographic Phantom Evaluation Project (PB 83-256933, $10.00).

FDA 83-8217 Patient Radiation Exposure in Diagnostic Radiology Examinations: An Overview (PB 84-118264, $22.00).

FDA 83-8218 A Basic Quality Assurance Program for Small Diagnostic Radiology Facilities (PB 84-119098, $17.50).

FDA 83-8219 Checklist for Establishing a Diagnostic Radiology Quality Assurance Program (GPO 017-015-00216-1, $4.00) (PB 84-118801, $10.00).

FDA 83-8220 Suggested State Regulations for Control of Radiation, Volume II - Nonionizing Radiation-Lasers (GPO 017-015-00218-7, $4.00) (PB 84-109669, $11.50).

FDA 84-8152 Annual Report of the Division of Risk Assessment - Fiscal Year 1982 (PB 84-149798, $11.50).

FDA 84-8221 Clarification of the Regulations for Diagnostic X-Ray Equipment (GPO 017-015-00219-5, $4.25) (PB 84-164946, $11.50).

FDA 84-8222 Instrumentation for Nonionizing Radiation Measurement (GPO 017-015-00220-9, $2.00) (PB 84-180603, $8.50).

FDA 84-8223 Computerized Treatment Planning Systems - Proceedings of a Symposium held at Henry Ford Hospital, Detroit, Michigan (PB 84-155118, $23.50).

FDA 84-8224 Quality Assurance in Nuclear Medicine - Proceedings of an International Symposium and Workshop, held in Washington, D.C. April 27-29, 1981 (GPO 017-015-00221-7, $7.00) (PB 84-199306, $19.00).

FDA 84-8225 Routine Compliance Testing for Diagnostic X-Ray Systems (PB 84-190958, $22.00).

FDA 84-8226 Calculation Programs for Routine Compliance Testing of Diagnostic X-Ray Systems (PB 84-167840, $11.50).

FDA 84-8229 Nationwide Evaluation of X-Ray Trends (NEXT) Eight Years of Data (1974-1981) (PB 84-189281, $10.00).

FDA 84-8230 Source Book of Educational Materials for Medical Radiographers - 1984 (GPO 017-015-00222-5, $2.75) (PB 84-208040, $11.50).

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